THE

# AMERICAN JOURNAL

# OF THE MEDICAL SCIENCES

FOR APRIL, 1881.

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The following works have been received:—

Esportazione Utero-Ovarica, per Grave Angustia di Pelvi Rachitica, practicata et 3 Luglio, 1880, dai Sanitari dell' ufficio d'Igiene col Concorso di quelli di Beneficenza. Soprapparta da Nove Giorni. Guarigionie della Madre, Relazione del Dottori RAMELLA CANDIDO e BRAMBILLA LUIGI. Torino, 1880.

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The usual exchanges have been received; their separate acknowledgment is omitted for want of space.

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OF

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## Article I.

### On the Treatment of Aneurism by the Elastic Bandage. By Lewis A. Stimson, M.D., Surgeon to the Presbyterian and Bellevue Hospitals, New York.

On the 25th September, 1875, Staff Surgeon Walter Reid, of the English Navy, published in the *Lancet* an account of a case in which, a fortnight previously, he had cured a popliteal aneurism by the use of Esmarch's elastic bandage, after other methods of compression had failed. The case attracted so much attention in England that, within two years, Waquet[1] was able to give the details of seven published cases, all by English surgeons, and all but one successful. A year later, Petit[2] collected twelve additional cases; and in January, 1879, Dr. R. F. Weir[3] added five more to the list, one being his own. I have since collected enough, mainly by the aid of the *Index Medicus*, to make a total of sixty-two cases in which the bandage, or the rubber tubing, or both together, have been used for the cure of aneurism. With three exceptions (axillary, internal circumflex, and anterior tibial) the aneurisms thus treated were all of the popliteal or femoral artery, and the great majority were popliteal.

The idea of using the bandage was suggested to Dr. Reid the day before he put it in practice, by seeing a limb kept empty of blood by this means for seventy minutes, during an operation for necrosis, without subsequent injury or inconvenience to the patient. He had then been using genu-flexion and tourniquets in the case of aneurism for about three weeks,

[1] Sur le traitement des Anévrysmes des membres au moyen de l'appareil élastique d'Esmarch, Paris, 1877.

[2] Bulletin générale de Thérapeutique, 1878, vol. xciv. p. 458, 504, 543.

[3] American Journal of the Medical Sciences, Jan. 7, 1879.

without having obtained more than a temporary arrest of pulsation, and, thinking that the failure was due to incomplete arrest of the circulation, substituted the bandage. He carried it tightly up the leg, loosely over the tumour, so as not to compress it, and then tightly again over the lower third of the thigh. The rubber tubing was then applied, and the bandage removed. At the expiration of fifty minutes, the pain had become so severe that the tube was removed, two Carte's compressors having first been adjusted over the upper portion of the femoral artery. By their aid the circulation was controlled for two hours longer, when the aneurism was found to be pulseless. As a precaution intermittent pressure with the tourniquet was maintained for a day or two, and then the patient was pronounced cured.

At his death, a few months later, the aneurism was found[1] reduced from its original size of a hen's egg to that of a small walnut; it was filled by a dark mass of cheesy consistency, evidently the remains of a blood-clot, and on some portions of its wall were strata of laminated fibrin, some of which were partly split off and turned inwards. The wall of the sac was well defined and not thick. The artery was obliterated by fibrous tissue for two and a half inches above the sac. The laminated fibrin was thought by Dr. Reid to have formed during the earlier attempts to cure by compression, and the displacement of portions of it to have been the result of the shrinking of the sac.

A similar condition was found at the second and only other recorded autopsy after a cure by this method;[2] there was a central blood-clot, and the artery was occluded, but there was no laminated fibrin, and the wall of the sac was very much thickened.

In the two fatal cases, in which death followed as a consequence of the operation, the sac was found filled with soft, recent clot, which in one of them extended up the artery (the anterior tibial) to and into the popliteal.

These autopsies indicate the process by which a cure is obtained in the successful cases: the blood retained within the sac coagulates during the application of the bandage; the clot increases during the subsequent compression of the artery and occludes it at its point of junction with the sac so effectually that no blood passes through. As the serum is absorbed and the clot shrinks, the wall of the sac follows it, and may also increase in thickness, probably as the result of the irritation of the clot. The same irritation of the wall of the artery near the orifice of the sac leads to the formation of granulations which permanently close the vessel. The incompleteness of the clot and the subsequent occlusion of the artery by it are shown by the fact that in the majority of the recorded cases of cure

[1] Lancet, Aug. 5, 1876.

[2] Wagstaffe, Lancet, 1876, ii. p. 461, for case; and Trans. Path. Soc. of London, vol. xxix. p. 72, for autopsy.

pulsation was noticed in the sac on the removal of the bandage if the artery was not compressed, but remained permanently absent after compression, digital or instrumental, had been maintained for a few hours.

The same facts explain the frequent failures, which present two clinical forms. In one the tumour shows no change on the removal of the bandage; coagulation has not taken place. In the other, after a period of variable length, during which pulsation has been slight or even entirely absent, it reappears with its original force, and the aneurism continues to increase. The blood has found its way past the clot, the more freely as the latter contracts, and has redistended the sac. What becomes of the clot under these circumstances is a matter of conjecture; it is probably disintegrated and washed away, the particles being small enough not to cause obstruction of the larger vessels. Or possibly it may remain unbroken within the sac and grow by new deposits sufficiently to effect a cure, for Mr. Rivington[1] states that one or two cases have come under his observation, "in which, after prolonged application of Esmarch's bandage, the symptoms were barely relieved, but after the lapse of a certain time from the application the aneurism ceased, as it were, spontaneously to pulsate." I have found no record of such a case, but the prompt recourse which was had to ligature after all but one or two of the failures would of course prevent the observation of such a process. In one case, however, Mr. Manifold's,[2] in which the patient was dismissed "cured," the subsequent history states that slight pulsation existed at the time of his dismissal, remained unchanged for six months, and then increased so much during the following eight months that he sought admission to another hospital, and was cured by instrumental compression.

Specimen from Mr. Wagstaffe's case of popliteal aneurism cured by the elastic bandage.

The sixty-two cases I have collected require to be grouped in three classes according to the method of treatment. In the 1st, which embraces fifty-two cases, Dr. Reid's method was used with or without certain slight and apparently unimportant variations; in the 2d, five cases, the elastic

[1] Lancet, Oct. 16, 1880, p. 610.
[2] Lancet, 1878, i. p. 86, and 1879, ii. p. 575.

bandage or the rubber tubing alone was repeatedly used alternately with a tourniquet or digital pressure to arrest the circulation completely for several hours; in the 3d, five cases, the bandage was used for a short time each day for many days, without any compression of the artery in the intervals, or with a tourniquet loosely applied.

The fifty-two cases of the 1st group furnish twenty-eight cures, twenty-two failures, and two deaths. Of the cures twenty-four were obtained by a single attempt, and four by two attempts separated by an interval of from one to four days. The bandage was applied in a majority of the successful cases for about an hour, the extremes being fifty minutes and three and a half hours; in some, it was carried loosely over the tumour so as not to compress it; in others, the tumour was left entirely uncovered, and in some the patient was made to stand up after the bandage had been placed upon the leg, and before it had been placed upon the thigh, in order that the sac might be fully distended. In two cases Mr. Heath bandaged the thigh from above downwards, so as to over-distend the sac, thinking that by this means the tendency to coagulation would be increased, but he adds that experiments subsequently made to verify the theory gave a negative result. After the removal of the bandage the artery above the tumour was compressed with the tourniquet or the fingers, usually for from two to nine hours, but in one case for only one hour and in another for five days; in one case genuflexion was substituted for pressure above. In two or three cases pulsation returned the next day, and was then definitively arrested by compression for a few hours.

In twelve of the twenty-two failures the same method was pursued in nineteen different attempts; in the remaining ten, with eighteen attempts, no pressure seems to have been used after the removal of the bandage, but in one of these the bandage was kept on for six hours, and in another for three hours, periods longer even than some of those during which the combined use of the bandage and tourniquet had effected a cure. In at least five of the first twelve the method was thoroughly and skilfully employed, with every detail used in most of the successful cases; the sac was kept full and the pressure was maintained for a sufficient length of time. They show therefore, when added to the twenty-eight successful cases, that the method even when rigorously employed may be expected to fail in at least fifteen per cent. of the cases. With reference to the remaining seven of these twelve failures it may be objected with some reason that the method was used improperly or for an insufficient length of time; as the details are not fully given, this question cannot be settled.

The relative percentage of success, however, is not sufficient to determine whether the method should or should not be used. If an attempt involves no risk, if its failure leaves the patient as fit to undergo other treatment as he was before, it would be not only proper but perhaps even obligatory to make it, even if the percentage of success was much less.

The alleged dangers are of three kinds: 1st, gangrene, as the result of the size or extension of the clot; 2d, the greater probability of the occurrence of gangrene if recourse must be had to the ligature after failure; 3d, such as may arise in consequence of the increased arterial tension in the other parts of the body during the attempt.

1. Death has followed the employment of the method in two cases; in the one with apparently impending, in the other with fully developed, gangrene. The cases are those of Dr. Weir and Mr. Rivington.

Dr. Weir's patient[1] was a man 38 years of age, with a popliteal aneurism as large as the fist and of four months' duration. An elastic bandage was placed upon the leg, and another upon the lower half of the thigh, the aneurism being left uncovered between them, and the rubber tubing was applied tightly at the upper margin of the second bandage. Two and a half hours afterwards the tubing was removed, but the bandages were retained for nearly two hours longer, together with a tourniquet which was adjusted when the tubing was taken off. The aneurism was then found to be consolidated, but pulsation returned in it on the following day; the leg was normal in temperature but somewhat swollen.

A second attempt was made three days after the first, and in the same manner; the tubing was taken off at the expiration of three hours and fifty minutes; and the bandage was retained four hours longer;[2] after its removal a tourniquet was applied for half an hour. A seven pound bag of shot was laid over the artery at Poupart's ligament as a precautionary measure, and the patient, who had borne the operation without ether and with the aid of only ten minims of Magendie, was left for the night.

The next morning he complained only of feeling a little weak, but his pulse was almost imperceptible at the wrist. Aside from the pulse there were no marked symptoms of shock, his temperature was 101.2°; his pulse 78. The leg, which was cold, was wrapped in cotton, hot air directed under the bedclothes, and whiskey administered by the mouth every half hour. In the afternoon the leg had become warm except upon its anterior surface and the dorsum of the foot, but the patient's general condition had not improved; the temperature was 99°; pulse 58, and entirely absent at the wrist. He died 27 hours after the cessation of the compression.

At the *autopsy* the leg measured two and a half inches more in circumference at the calf than the other; it showed slight serous infiltration and minute capillary hemorrhages, especially in the deeper parts. The veins were normal and filled with recently clotted blood. The femoral artery contained no clot, and was rough and thickened. The artery below the tumour was occupied to some distance beyond the bifurcation of the popliteal by a small amount of soft, recent clot. The aneurism, which arose from the anterior portion of the artery and communicated with it by an oval opening one and a quarter inches long, was filled with well-formed, recent clot. There was advanced fibrous phthisis of both lungs, granular fatty degeneration of the heart, and atheroma of the aorta. The kidneys were intensely congested, but otherwise normal.

The conclusion which Dr. Weir drew from the case is eminently proper and judicious. He says that although there were no positive signs of gangrene, and the death may be attributed to another cause, possibly shock and the degenerated heart, yet it would have been more prudent to remove the bandage earlier. He recommends, therefore, that the tubing and bandage should both be removed after two hours, and the tourniquet

[1] Archives of Medicine, vol. iii. 1880, p. 207.

[2] It was Dr. Weir's intention to have the bandage retained for only two hours, but his directions were misunderstood.

then applied for two hours more, or longer if rendered necessary by continued pulsation in the tumour.

In Mr. Rivington's case[1] the aneurism was of the anterior tibial artery, and had ruptured externally before the patient came under observation. Esmarch's band was applied in the usual manner for an hour and followed by the tourniquet. Pulsation reappearing when the latter was loosened, it was reapplied and kept on all night. The next day the clot in the external opening gave way, and severe hemorrhage ensued; it was checked by the tourniquet. The man refused amputation, and Esmarch's bandage was reapplied for one hour and ten minutes, followed by digital pressure "for some time longer." "Pulsation had not wholly ceased in the aneurism after the removal of the elastic tube, and the circulation promised to become re-established in the leg and foot. But when coagulation in the sac became complete, and all pulsation and murmur were abolished, it was found that, whilst the heel became hotter than usual and showed marked evidence of the re-opening of a collateral circulation, the anterior part of the foot and the toes were cold." On the 8th day a line of demarcation had formed in the lower third of the leg, and a few days afterwards the patient died. The condition disclosed by the autopsy has been described above.

As the patient refused to accept the amputation which was urged both by Mr. Rivington and by Mr. Hutchinson who saw the case in consultation, and as gangrene would probably have followed any other attempt at conservative treatment, it cannot be fairly charged to the method, although undoubtedly caused by it. Mr. Rivington employed it only because he was allowed to do nothing better, and because it was necessary to do something to arrest the hemorrhage. Dr. Weir's case, therefore, is the only fatal one that is chargeable to the method, and, if the advice he has given is followed, it seems probable that it may long remain so.

2. The second question, that of the greater probability of the occurrence of gangrene if recourse must be had to the ligature after failure of elastic compression, is raised by Mr. Bryant's experience in one case and by the fact that this probability has been shown to be increased after ligature by previous compression of the artery by the tourniquet or finger.

Mr. Bryant[2] applied the bandage twice, for three hours each time, with an interval of four days, for a popliteal aneurism in a man of 45 who could bear neither instrumental nor digital pressure upon the artery. Morphia was used in the first application and ether in the second to relieve pain. The first attempt was followed by hardness of the sac, which, however, entirely disappeared before the second was made. Of the second he says "little had been gained from it." A fortnight later he tied the femoral artery with catgut; the wound healed by immediate union, but the foot "soon became the seat of anæmic gangrene, and a fortnight after the application of the ligature was amputated in the middle of the leg, and a good recovery followed."

This is the only instance of gangrene in the sixteen cases of the list in which it is recorded that the ligature was used after failure of the bandage, and the number is too small to determine whether or not the propor-

[1] Lancet, October 16, 1880, p. 608.

[2] The Practice of Surgery, 2d Amer. ed. p. 324.

tion is greater than that following simple ligature, two or perhaps three in eighty-seven according to Mr. Holmes. (*Lancet*, 1874, ii. p. 860.)

But even if gangrene should be twice as frequent after secondary ligation, its relative frequency in the total number of cases treated by the bandage would probably not be greater than after primary ligation. The explanation suggested by Mr. Bryant, and probably the correct one if a causal relation exists, is the plugging of the small arteries by fragments of the clot.

3. It has been shown by observations made with the sphygmograph that while the elastic bandage is upon a limb the intra-arterial pressure is increased throughout the other portions of the body, and it has been suggested that this increase might be dangerous if certain conditions of the heart or arteries should coexist. No accidents from this cause have yet been recognized, and if such a contra-indication should exist in any given case the danger can be avoided by using the tubing alone, as has been done in two cases. By this means the amount of blood normally contained within the limb would be retained there during the operation, and would not be forced out to augment that contained within the other portions of the circulatory system.

The second of the three groups into which the list is divided contains five cases, those in which the bandage or the tubing alone was used two or more times, alternately with instrumental or digital pressure, to arrest the circulation for several hours. It furnishes four successes and one failure, the latter subsequently treated by ligature which was followed on the thirtieth day, the wound having then been healed a week, by fatal secondary hemorrhage. In the shortest case the bandage was applied for sixty-five and thirty-five minutes with intermediate and subsequent digital pressure for fifty and eighty-five minutes. In the longest the bandage was applied four times for two hours each time, and the tourniquet in the intervals and subsequently to complete twenty-four hours. In the others the total period of compression was from eight to nine hours; in one of them the tubing was used without the bandage, and in another, the unsuccessful one, pulsation returned the next day, and the tourniquet was reapplied for three hours, but with only temporary success; the ligature was then used.

In the third group, five cases with three successes and two failures, the method employed was radically different. Three of the cases were treated by Gersuny,[1] one by Raab,[2] and one by Esmarch.[3] The general plan was to apply the bandage and the tubing with just sufficient force to arrest the pulsation, and to leave it in place for about half an hour; to repeat this daily or twice a day for several weeks, and to compress the artery with a tourniquet or shot-bag for two or three hours after each application of the bandage. Gersuny cured his first case in eighteen days by twelve appli-

[1] Gersuny, Archiv für Klinische Chirurgie, 1879, vol. xxiv. p. 798. [2] Ibid.
[3] Centralblatt für Chirurgie, 1879, vi. p. 65.

cations of thirty minutes each, and his second case, aneurism of the upper portion of the femoral artery, in twelve weeks by applications for twenty to twenty-five minutes daily during four weeks, and for fifty minutes twice a day during the remainder of the period. In this case the aneurism was situated so high upon the thigh that the rubber tube crossed its upper portion, and the bandage was drawn snugly over its lower portion through fear that otherwise the pressure of the tubing might cause its rupture. Consolidation was complete at the end of the treatment, but slight pulsation returned at intervals and was repeatedly arrested by a few applications of the bandage made by the patient himself. His third case was a popliteal aneurism upon the other leg of the same patient. One application, lasting for from thirty to fifty minutes, was made daily for ten days, and then two for from one and a quarter to one and a half hours daily for ten days longer. The aneurism became harder and smaller, but continued to pulsate, and the femoral artery was tied a year afterwards. In Raab's case forty-four applications of twenty minutes each were made in seven weeks, each followed by compression of the artery for from fifteen minutes to four hours. The aneurism apparently ruptured during the treatment, and was finally cured. In Esmarch's case, a femoral aneurism in the lower part of the thigh, three applications of half an hour each, not followed by compression of the artery, were made daily for fourteen days. As no appreciable gain had been made, the treatment was then abandoned.

The conclusion to be drawn from all these cases seems to be that we have in the elastic bandage an efficient means for safely shortening the duration of the treatment by compression of popliteal and some femoral aneurisms. The greater efficiency and the more speedy action of the method are apparently due mainly if not entirely to the arrest of the circulation through the collateral channels as well as through the main artery, thus securing the absolute stagnation of the contents of the sac. Consequently, the rubber tubing which is drawn tightly twice or three times about the limb above the aneurism is to be considered the efficient part, and the principal, perhaps the sole, benefit from the bandage is that of making a less severe constriction by the tubing sufficient.

The details of the method involve the retention of the bandage or tubing for one or two hours, and the compression of the artery by a tourniquet or the fingers for several hours afterwards. This compression should be firm enough to prevent the flow of blood through the artery, but after it has been kept up for an hour or two it should be temporarily intermitted, as Dr. Weir suggests, in order to ascertain if pulsation returns in the sac. If pulsation returns within a few hours after an apparent cure has been obtained the artery must be again compressed for some time. The elastic bandage should not compress the aneurism, for the cure is to be effected by filling the sac with a clot, and if this clot is smaller than the natural capacity of the sac it will be easier for the blood to make its way into the

latter after the removal of the compression, and thus perhaps prevent a cure. If the primary clot has extended upwards into the artery, this of course is less likely to happen, but as the surgeon cannot be sure that such extension will take place, it is prudent to act as if it would not. On the other hand, hyper-distension of the sac, as practised by Mr. Heath, seems unnecessary and perhaps even dangerous. The clot is in itself a source of irritation to the wall of the sac, and if this slight irritation is increased by extreme tension it may pass beyond the degree which leads to tissue-production and cause suppuration.

The introduction of needles or of a coagulating injection has been suggested but never yet practised. It might be proper in a second application in those exceptional cases in which the first trial has not caused coagulation, but as it involves a slight risk of suppuration it will probably be thought advisable not to employ it in the first attempt.

*Note.*—The following is a list of the sources from which the cases above referred to have been obtained :—

*Petit*, Bulletin gén. de Thérapeutique, 1878, pp. 458, 504, 543. *Weir*, Am. Journ. Med. Sciences, Jan. 7, 1879; N. Y. Med. Journ., vol. xxix. p. 520, and vol. xxxi. p. 637; Archives of Med. (N. Y.), 1880, iii. p. 207. *Gersuny*, Archiv für Klinische Chirurgie, vol. xxiv. p. 798. The Lancet, 1875, ii. p. 448; 1876, ii. pp. 184, 461; 1877, i. p. 571; 1878, i. p. 86; ii. p. 880, and Sept. 28; 1879, ii. pp. 81, 121, 238, 575; 1880, i. p. 289, ii. p. 608. Transactions of Pathological Society, London, vol. xxix. p. 72. Transactions of Clinical Society, London, 1879, vol. xii. p. 55. British Medical Journal, 1880, ii. p. 15. Transactions Med. Soc. Kings Co., N. Y., 1879–80, p. 223. Australian Med. Journ., May, 1879, p. 243. Bryant's Practice of Surgery, 2d Am. ed., p. 324. St. Bartholomew's Hospital Reports, vol. xv. p. 75. Centralblatt für Chirurgie, 1879, vol. vi. p. 65. Bulletins de la Société de Chirurgie, 1880, p. 570.

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## ARTICLE II.

## A RECORD OF THE EPIDEMIC OF BREAK-BONE FEVER IN CHARLESTON, SOUTH CAROLINA, IN 1880. By JOHN FORREST, A.M., M.D., of Charleston, S. C.[1]

THIS report is based upon the answers of twenty-one physicians of Charleston, to a series of questions prepared by the writer, and distributed to the profession in October last. It is necessary to state, that, according to the report of several physicians, a number of cases of break-bone fever occurred in Charleston in the autumn of 1879, some of which were remarkable for the severity of their symptoms. But after a spell of cold

[1] This paper was read before the Medical Society of South Carolina at the Anniversary meeting Dec. 12, 1880, as the report of the Committee on Epidemics and Meteorology, consisting of Drs. J. Ford Prioleau, T. Grange Simons, and Manning Simons, with which committee the writer was temporarily associated, by a resolution of the Society at a previous meeting.

weather in November, no more was heard of the disease during the winter. The winter was unusually mild, with scarcely any frost, and the summer was looked forward to with general apprehension, as likely to be a sickly one, especially as there had been extensive excavations made in the streets, for the purpose of laying water pipes, and also for paving, both of which works were continued into very warm weather.

The following notes of the weather, taken from observations carefully made in the southern part of the city, and beginning from November 1879, properly belong here.

On the 21st of November, 1879, occurred the first and only frost of that winter. The minimum temperature of the month was 30° F. In December the minimum temperature was 34°. The lowest temperature of the earlier part of the year 1880 was in January, 33°, so that we had no frost after the new year.

The mean temperature of the first three months of the year was 58.6°; very mild weather for the season. April was warm, maximum temperature 87°; mean 67°. The next five months were hot. In May the maximum was 89°; mean 73.7°. In June the temperature reached 100°, the maximum for the year; mean 80.6°. In July the mean temperature, 83.4°, was the highest of any month of the year. In August the mean temperature was 81.4°. In September it was 75.8°, and the maximum 89°.

From January to June the rainfall was inconsiderable, averaging for each of the six months 2.48 inches. In May was the least rainfall, 0.90 inch, and the fewest number of rainy days, 4, in the year. In July the rainfall was 5.77 inches. In August there was not much rain, but in the early part of September there was a good deal; so that, preceding the outbreak of the epidemic in July, we had had six months of dry weather.

From February to August, seven months, the prevailing direction of the wind was from the southwest.

There were two thunder-storms on the 2d of June, the first lasted an hour, and the second two hours. On the 14th of the same month there was a third, lasting only a few minutes. In July there were three, on the 5th, 12th, and 23d, of which the first two were very violent. Others occurred on August 6th and September 8th.

During the first four months of the year 1880, there prevailed throughout the city a widespread epidemic of febrile roseola, or, as it was most generally called, the "German measles;" and in the early summer there were a considerable number of cases of remittent, intermittent, and typhoid fevers. But during the epidemic of break-bone fever, no other disease was generally prevalent.

The disease was not recognized as epidemic until the end of July, but cases are reported to have been seen at a much earlier date. One physician reports having been called to his first case on the 13th of March; another

in May. Three met with it in June, several in July, but the majority not until August, when it became general all over the city. Towards the end of September it began to decline, but still showed considerable activity in October, many of those who returned to the city in that month being promptly attacked. Cases have also occurred both in November and December, notwithstanding the occurrence of light frosts.

There was no distinction of age, race, or acclimatization among those attacked. Infancy and old age, the white man and the black, native and foreigner, those who had had the yellow fever and those who had not, were equally liable and suffered alike.

The origin of the disease is still involved in obscurity, the reports rather expressing what it is thought not to be, than declaring what it really is. No hint of a foreign origin, or of its having been imported, is thrown out, nor is it thought to be contagious. The opinion is all but unanimous that it is not malarial, in the ordinary acceptation of that term, and it is generally believed to be due to an atmospheric poison derived from as yet unknown sources.

The period of incubation has not been determined with any degree of certainty, and it is variously put down as extending from a few hours to a number of days.

The attack commenced sometimes suddenly, at other times after a varying period of malaise. It was generally ushered in with chilly sensations, or an actual chill, amounting in some cases to a rigor, accompanied by a rise of temperature and most frequently headache, followed by pain in the back and limbs.

The pulse is for the most part described as full and frequent, especially at first; but, after the subsidence of the fever, it became slower even than normal, nor was its frequency as a rule at any time in proportion to the temperature. The number of beats in a minute ranged upwards from 90 to 140, and again sometimes fell below 60, and in one instance to 48. It was often weak and compressible, and sometimes intermitting.

The temperature as a rule was not very high, the thermometer ranging usually from 100° to 104°, but in some instances 105° and 105½° were noted. On the subsidence of the fever the temperature sometimes fell below the normal, as low in one instance as 97°.

According to the majority of the reports the fever, as a rule, showed neither remissions nor intermissions. Doubtless there were oscillations of the thermometer in all cases, and slight differences between the morning and evening temperatures, but it seems to have been most generally a continued fever of a single paroxysm. Yet it is certain that both remissions and intermissions of irregular character occurred in many cases, as testified to by no inconsiderable proportion of observers. Relapses, too, are reported to have been not uncommon, but no regular period could be assigned for their recurrence, and many of these would appear to have been

rather recurring paroxysms after remission or intermission than genuine relapses; such, for instance, as are spoken of as occurring "on the second day," or "from a few hours to a day or two." It is also probable that malarial influences impressed their character upon many cases.

The respiration, generally hurried at first, afterwards corresponded with the pulse.

The tongue, generally moist, in many cases broad, thick, and flabby, in others elongated and pointed, was at first clean or coated white, subsequently becoming brown in the middle, the margin and tips remaining clean, or taking on a deep pink or red hue. Sometimes the whole organ was covered with a thick, brown, ill-looking fur. In some cases there was a tendency to dryness, and, in one case, the tongue is described as having been "dry, brown, fissured, and bleeding."

The appetite failed completely in most cases, and no relish was retained for any food whatever, even water being repulsive to the taste. Thirst was not usually much complained of. Digestion was impaired, and remained so in many cases even after convalescence. There was a great deal of nausea in the majority of cases, and frequently vomiting.

The bowels were inclined to be constipated, especially at first, though not unfrequently diarrhœa, in some cases of a dysenteric character, succeeded. Very black stools full of decomposed blood are mentioned in one report as having been not uncommon, and actual hemorrhage from the bowels occurred in some cases.

Pain, which was one of the most constant features of the disease, was complained of in almost every part of the body, now in one place now in another, generally in several places at once. The head, the small of the back, and the lower limbs were most commonly the seat of pain. Headache was mostly frontal and very intense. Other regions mentioned, where pain was complained of, were the joints large and small, the epigastrium extending to both hypochondria, the region of the bladder, the abdominal walls, along the spine, the bowels, the face, and the skin.

Very little swelling was observed anywhere. One report speaks of "slight swelling at the seat of pain, when that was in the joints." Another says it was sometimes seen about the face, particularly the eyes, also on the hands and feet. A third mentions swelling of the parotid and cervical glands in certain cases. In one case, verbally communicated to the writer by the patient (an M.D. and a gentleman distinguished in science), on the invasion of the fever, the hands swelled up and became red and painful, the pain extending up the arms. The symptoms suggested poisoning by poison-plants, but there had been no exposure to such contact. Some cases of orchitis were also verbally reported.

Nervous symptoms were very prominent in most cases from the first. Headache, restlessness, sleeplessness, and mental depression were nearly always present, sometimes there was tremor of the hands, and delirium

was not uncommon, especially in children. Three cases of congestion of the brain were reported, two of them fatal.

A symptom present in the great majority of cases was a cutaneous eruption confined to no one region, but found on the face, neck, chest, limbs, palms, etc. It was by no means uniform in character, assuming in different cases the forms of erythema, roseola, sudamina, urticaria, and even of eczema. It was followed by desquamation. The time of its appearance was most frequently on the subsidence of the fever, but sometimes it was coincident with the onset of the disease. It is said sometimes to have been the only symptom seen.

The skin was usually dry at first, but later on profuse sweating was common; and sometimes the disease was ushered in with sweating, which continued throughout.

Hemorrhage from the mucous surfaces was very common. Bleeding at the nose was the most frequent, but it was also observed to take place from the gums, tongue, fauces, pharynx, stomach, and bowels. Pulmonary congestion with bloody sputa is reported in two cases, and dysenteric discharges in several. The catamenia in a number of cases were brought on in advance of the natural period, and the quantity of the discharge was augmented.

Premature labour occurred sometimes, but no case of miscarriage in the early stages of gestation is reported.

The urine was greatly diminished in quantity; in one case the patient, a robust man, passed only eight ounces in the twenty-four hours for the first two days. The reaction was acid, and the specific gravity very high. It became turbid soon after passing, with copious deposit of urates. Albumen was rarely found, and, except in complicated cases, only when the fever continued high for several days.

No single symptom invariably characterized an attack, and, to quote the language of a distinguished physician in his answer to the questions, "there was more than in any other disease great want of uniformity as to mode of invasion, severity of disease, character of symptoms, duration of attack, etc. etc. Prognosis as to ultimate favourable termination was about all one could venture to predict."

The following sequelæ were observed: excessive and obstinate prostration nearly always, sleeplessness very commonly, night sweats, anæmia, hysteria, neuralgia, diarrhœa, boils and carbuncles, conjunctivitis, bronchial catarrh, deafness, aphonia, œdema, icterus, cystitis, rheumatism, and temporary paralysis of the lower limbs.

The treatment generally adopted was symptomatic, and consisted in the use of mild cathartics, diaphoretics, anodynes, arterial and nervous sedatives, sinapisms, stimulants, and tonics, *pro re natâ*. Quinia was used as a febrifuge and tonic, but is not reported to have exercised a specific influence over the disease either prophylactic or curative.

Of 2015 patients treated, 7 died, but of these more than one-half died from the disease under which they were previously labouring. The record is as follows: died of epilepsy, 1; syphilis, 1; hip-joint disease, 1; *convulsions*, 1; *congestion of the brain*, 2; *cerebral embolism*, 1. In the last four cases death was probably due either to the severity of the disease itself, or to the consequent prostration.

To estimate accurately the number of cases that have occurred in the city would be very difficult, as by far the majority of those attacked availed themselves only of domestic therapeutics without employing any physician. We have, however, obtained from forty-one physicians the number of cases each attended, the total amount being 4036. As there are between fifty and sixty practitioners of medicine in Charleston it is safe to estimate the number of cases treated at upwards of 5000; and if, as is generally allowed, not more than one-third of the sick received professional attention, there must have been more than 15,000 cases of the disease.

Outside of Charleston the disease prevailed at Mount Pleasant, Sullivan's Island, Summerville, Beaufort, Port Royal, Columbia, and Aiken, according to reports received; and it is said to have occurred at other places from which we have had no word.

In making a general comparison of this with previous epidemics, we find somewhat similar meteorological conditions, as, great heat, want of rain, absence of thunder-storms, and prevailing southwest wind. The symptoms of the disease in this epidemic, however, do not appear to have been generally so violent and distressing as in some former ones, nor was the epidemic so nearly universal.

In conclusion, I beg to return my thanks to the other members of the Committee on Epidemics and Meteorology of the Medical Society of South Carolina for their kind and valuable assistance; also to Mr. John Grover, of the U. S. Signal Corps, to whose kindness I am indebted for the information on the weather; and lastly, and in an especial manner, to those gentlemen of the profession in Charleston and throughout the State, who have so politely troubled themselves to answer the questions propounded, and have evinced in personal conference and by letter so much interest in furthering my object, which was simply to place upon the minutes of the Medical Society of South Carolina a record of an epidemic so remarkable for its wide-spread character, the severity of its symptoms and a minimum of mortality.

## ARTICLE III.

### ON NON-MORTAL FRACTURES OF THE BASE OF THE SKULL, WITH AN ACCOUNT OF ONE HUNDRED AND THIRTY-FIVE CASES. By JOHN A. LIDELL, A.M., M.D., of New York, late Surgeon to Bellevue Hospital, Inspector of the Medical and Hospital Department of the Army of the Potomac, etc. etc.

THE base is the most fragile part of the cranial dome. It is less able to withstand assaults from without than the vault, because, 1, it is considerably flatter in shape, or less strongly arched; 2, it is much thinner and more brittle in several places, *e. g.* the orbits, the nostrils, the occipital base, etc.; 3, it is, in general, quite destitute of diploë; 4, its sutures are mostly not serrated; 5, it is perforated by many characteristic foramina, and fissures of large size. When from any cause the skull is strongly compressed, whether vertically or laterally, it gives way first at the base. No wonder then the skull gets broken at the base much oftener than elsewhere, in the casualties of every-day life. Moreover, observation has shown that fractures of the cranial base are very common; so much so, indeed, that they form by far the greater part of the fatal injuries of the head which are met with in our civil hospitals. (*Prescott Hewett.*)

But fractures of the basis cranii are also very deadly. Some experienced surgeons hold that recovery from this lesion only very seldom, if ever, occurs. For instance, the sagacious Hennen, who may justly be taken to represent a numerous class of our contemporaries, states that "fractures affecting the basis of the cranium are universally fatal." (*Principles of Military Surgery*, p. 271, Am. ed.) Other eminent surgeons likewise, maintain that this lesion generally proves fatal. Samuel Cooper says: "Experience teaches that fractures of the basis of the skull are extremely dangerous, because they are generally attended with extravasation, or followed by inflammation of the brain." (*Dictionary of Practical Surgery*, vol. i. p. 467, Am. ed.) Guthrie also says: "Fractures of the base of the cranium are generally fatal, but not always so; for some persons live a considerable time afterward, and appear to die from other causes; so that partial, if not perfect recovery is possible." (*Commentaries*, etc., p. 317, Am. ed.) The writer, however, has been led by his personal experience and researches to believe that recovery from this accident, more or less complete, occurs very much oftener than Guthrie states or surgeons in general suppose; in fact, that patients having fracture of the basis cranii not unfrequently get well. In proof he offers the histories of six examples which have passed under his own observation, together with brief abstracts of one hundred and thirty-one cases which have occurred in the practice of American surgeons in recent years.

CASE 1. *Compound Comminuted Fracture (gunshot) of Cranium at Base of left Cerebral Hemisphere (anterior lobe); Recovery.*—James F. (Confederate), aged 18, wounded by a conoidal bullet, and captured Nov.

7, 1863. The missile penetrated the *right* supra-orbital arch about one inch from the internal angular process, and passing obliquely to the left, fractured the orbital plate, and escaped from the *left* temple, half an inch above the zygoma, and midway between the rim of the orbit and the left ear. He was struck senseless, and did not come to himself until two days afterwards, while being taken out of the ambulance at Stanton Hospital, to which he was brought on November 9th. Left eye sightless. He had much pain in the head, but no fever, nor delirium, nor general paralysis. Ordered him to be kept in bed free from noise and excitement, to have the injured part of head kept constantly wet with ice-water, and his bowels kept loose with Epsom salt. Nov. 21. Left eyeball painful, hot, and protruding from the socket, on account of swelling behind it; conjunctiva dark-red; some purulent discharge from wound. 30th. Swelling in left eye-socket, pain, and heat much diminished. Purulent discharge continues, but mostly from the wound of entrance. Dec. 15th. He cannot open the lids of either eye without applying his fingers to them. January 1, 1864. He now opens the right eyelids without manual assistance, and sees very well with that eye; left eye continues sightless; some purulent discharge from both wounds; but little bone has come away. February 1. Both orifices have healed with a firm cicatrix; his general health is good. There is ptosis of left upper eyelid, with utter inability to raise it; left eyeball completely sightless, but he can rotate it inward, downward, and outward, but not upward. There is paralysis of the left optic nerve, and of the branches of the motor oculi that supply the superior rectus and the levator muscle of the upper lid. There is now no trouble whatever in the right eye. March 28. Being in excellent condition, he was transferred to the Old Capitol prison for exchange.

This patient did not exhibit hemiplegia because the brain-substance was not compressed. He did not exhibit paralysis of any organs excepting the left eye and certain muscles connected therewith, whose nerves were injured by the missile. He did not exhibit loss of speech (aphasia) nor any special disturbance of that function, which seems rather remarkable, if "the seat of articulate speech" is solely "located in the posterior portion of the third left frontal convolution," as often asserted. However, it is not improbable that, in this man's brain, the seat of articulate speech was located on the *right* side, in the posterior part of the third *right* frontal convolution, where it escaped all injury.

The loss of consciousness, which was complete, and likewise protracted through a period of about two days' duration, was doubtless caused by "shock" and by concussion or commotion of the brain. If it had been produced by compression of that viscus, hemiplegia of the right side would also have been present.

The principal dangers to which he was exposed during the after treatment were connected with the occurrence of inflammation of the membranes and substance of the brain, but this accident was happily averted, and the man made an excellent recovery. Moreover, the plan of treatment was simply antiphlogistic, and consisted of quietude, of cold applied to the wounded part, of a meagre diet, and the administration of saline purgatives; and under it the man made an excellent recovery.

CASE 2. *Gunshot Wound Destroying Right Eye, and Fracturing Base of Skull; Missile lodged in Right Temporal Region, where it was found and extracted, seventy-nine days afterwards; Recovery.*—J. A. F., aged 20, wounded May 2, 1863, by a conoidal musket-ball, which struck the left side of the bridge of his nose, and broke it down; thence passed obliquely backward, upward, and outward toward the right side of head, lacerating the lower lid of right eye, destroying the right eye itself, and after going through the outer wall of the orbit, lodged in parts beyond and was not extracted. He fell down when hit, but thinks he did not lose consciousness. He found himself to be very dizzy, and that the dizziness was much increased by arising. He did well, the wound healed, and on June 13, he was fourloughed. On July 20, he was admitted to Stanton Hospital, under the writer. The bridge of his nose was seen to have been broken down, the lower lid of right eye lacerated, and the right eyeball destroyed, but these wounds were already healed with a good scar. Further examination disclosed a small, hard, circumscribed swelling in the right temporal region, about one inch above the zygoma, believed to be caused by the missile. Accordingly, this swelling was opened by an explorative incision, and the missile, originally cylindro-conoidal, but now much battered and altered in shape, with a small fragment of bone sticking therein, was found lying beneath the temporal fascia and impacted, as it were, in the substance of the temporal muscle, from which it was removed with some difficulty seventy-nine days after the wound was inflicted. The operation was not attended with the escape of any pus, or the removal of any fragments of bone. The dizziness which previously had entirely disappeared, returned on removing the bullet. Afterwards the patient did very well. August 2. Wound of operation nearly healed, original wound doing well; has no dizziness unless he exerts himself. The patient, it is believed, made a good recovery. The missile was sent to the Army Medical Museum on August 3.

This case bears a strong resemblance to the last. In both, the lesion occurred at the base of the anterior part of a cerebral lobe, one eye being wounded and the anterior cranial fossa fractured. In both, the symptoms of cerebral concussion were more or less strongly developed, without, however, the occurrence of hemiplegia, or any evidence, whatever, of cerebral compression. The main difference between them was that in one case the left, and in the other the right orbit was wounded. In the first case the track made by the wall was higher up in the brain than it was in the last, and consequently the cerebral symptoms were more strongly marked and threatening than they were in the last case. Dizziness was a prominent and troublesome symptom in the last case. It was probably caused by cerebral anæmia, for it was increased by assuming an erect posture, and by physical exhaustion, such as that which results from a long walk, etc. However, in the end this patient also made a good recovery; but I cannot help thinking that he would have done much better if he had not been furloughed, if instead thereof he had been kept at rest and had the antiphlogistic regimen and plan of treatment enforced until his recovery was complete, as was done in the last case.

The following example was under the writer's observation for a considerable period of time:—

CASE 3. *Gunshot Fracture of Os Occipitalis, etc., at Base of Skull, on left side; Missile penetrated Brain and remained unextracted; Recovery; patient known to be still living nearly eight years afterwards.*—Samuel D. S. was wounded on August 27, 1862, by a carbine ball, which struck his head at a point two inches behind the left ear, and produced, apparently, only a scalp wound across the median line. He fell to the ground, and was very dizzy, but did not lose consciousness. When seen by his surgeon a probe was passed to the depth of two inches into his brain-substance, along the track of the missile, but without discovering its locality. He was sent to the third division hospital, at Alexandria. The extent of the injury was not suspected, and the case was treated as a superficial scalp wound. On September 3, he was admitted to the Broad and Cherry Streets Hospital, at Philadelphia. Healthy suppuration continued, and a fragment of bone was discharged from the wound. On November 6, the wound being healed, he was returned to duty. Two days later, he was admitted to the Ryland Chapel Hospital, at Washington, to be treated for a large abscess of the left ear. On December 5, when the hospital was closed up, he was transferred to the Stanton Hospital, then under the writer's charge, along with a number of the residual patients. The discharge from this abscess of the ear had not yet entirely ceased, and he was suffering constantly from headache and pain about left ear, which were greatly increased by exposure to cold; he also suffered from vertigo and from acute pains, darting across the base of the brain, from the right temple to the cicatrix, behind the left ear. There was no paralysis, and the functions of the body were generally well performed. The cicatrix, though tender, was firm. Soon afterwards he was allowed, at his own request, to serve in the capacity of nurse; but, in two weeks' time, he was relieved from this task, as the pain and vertigo were unduly increased, and he was becoming pale and emaciated. He was discharged from the service on January 19, 1863. It was the opinion of several surgeons who examined the injury, including the writer, that the missile still lodged in the cranial cavity. On January 8, 1864, this man, while visiting Washington, in pursuit of his pension, called on the writer, at Stanton Hospital. His condition then appeared to be about the same as it was in January of the preceding year, when he was discharged from the service. The wound had remained closed. On March 2, 1870, his claim for pension was still pending, and his disability rated three-fourths, and probably permanent.

After an attentive consideration of this man's case, there appears to be no good reason to doubt that the missile penetrated the brain-substance and lodged; that the aural abscess was caused by the gunshot lesion of the skull; that the chronic pains at the base of the brain and left ear, of which he complained so much, were also due to the gunshot lesion, and that at last report the missile still remained unextracted.

CASE 4. *Gunshot Fracture of Mastoid and Petrous Portions of Left Temporal Bone; Missile lodged and was extracted; Long-continued Suppuration and Exfoliation; Partial Recovery.*—On April 19, 1865, at the Head-quarters of the Army of the Potomac, near Burksville, Va.,

the writer carefully examined Major Wm. T. S., A. D. C., for disability, attended with the following history: This officer was wounded at the Wilderness, May 6, 1864, by a cylindro-conoidal ball, which penetrated the mastoid portion of the *left* temporal bone, passed inward and somewhat forward to the depth of about two inches, and lodged. He was knocked from his horse senseless, and remained unconscious about an hour. The missile was extracted on the field. It was much elongated, and several small splinters of bone were firmly stuck into it. He was taken to the second division hospital of the Second Corps. When he came to himself he was speechless, being unable to articulate a single word, with complete motor paralysis of the *left* side of his face and partial paralysis (hemiplegia) of the *right* side of his body; audition in left ear totally destroyed. He was taken to Washington for treatment, and remained speechless for twenty days. Purulent matter was discharged from the left ear, as well as from the wound, containing numerous small pieces of bone. His mind at times was also considerably impaired. He slowly improved, and in March, 1865, he had so far recovered as to be on duty with Major-General Webb, Chief of Staff to General Meade, commanding the Army of the Potomac. He served actively in the short but brilliant campaign which ended on April 9, at Appomatox, with General Lee's surrender. He was made worse by this service. On April 19, when I examined him, the wound was still open and discharging. The left side of his face was still paralyzed to a considerable extent from lesion of the *portio dura*. He was totally deaf in left ear from lesion of the *portio mollis* and internal ear. He had slight paralysis (hemiplegia) of right half of body from injury of the *motor tract*. He dragged his right foot and toes in walking. He could write, but with much difficulty. He complained of vertigo, and that his memory was much impaired; fatigue always increased his troubles. I advised him to proceed at once to Philadelphia to get treatment from Drs. Weir Mitchell and Morehouse. On January 17, 1880, I again examined this officer. Notwithstanding the best of treatment, his condition, upon the whole, is much worse. He has acquired traumatic epilepsy. His intellect is considerably weakened. The facial palsy continues, and he cannot close his left eyelids. The left eyeball is bare, staring, and somewhat protuberant from paralysis of the ocular muscles. The hemiplegia (right-sided) is attended with considerable atrophy and contraction of the flexor tendons. The sight of his left eye is much impaired; that of his right eye somewhat. He continues totally deaf in left ear. He is subject to neuralgic pains in left side of head, face, and neck. He is much affected by changes of the weather. The wound is still unhealed, and discharges purulent matter mixed, from time to time, with small fragments of bone.

Furthermore, *two* cases published by the writer in the number of this Journal for January, 1880, in an article on "Fractures of the Cranial Bones" (Cases XII. and XIII.), are examples in which the basis of the skull was also broken, and recovery followed. In each of them there was simple fracture of the os frontis, with much displacement. In each of them, too, the fracture extended downward into the eye-socket, and involved the orbital plate of the frontal bone, with, perhaps, still other portions of the anterior cranial fossa.

Thus, it is shown that I am personally acquainted with at least six cases

in which fractures involving the base of the skull were followed by recovery. But I also find, on making suitable inquiry and research, that my experience is, in reality, not exceptional; for, scattered widely through the pages of the first surgical volume of the "Medical and Surgical History of the War of the Rebellion," there are recorded, with more or less minuteness of detail, the histories of more than one hundred and thirty cases which belong to the same category. These cases, however, are not grouped together under one head in that collection, but are reported under many different heads; and it has cost me considerable time and labour, that was not unpleasantly expended, in searching for and preparing to utilize them. Where these cases are now hoarded, they are inaccessible to most members of the profession. They do but little good there, because they are comparatively unknown. But, at the same time, they seem like a new revelation concerning the subject-matter of this article; and they add so much to the domain of human knowledge on this topic, and throw so much light on some other obscure and controverted points in cranial pathology, that, beyond question, they ought to be popularly incorporated with the medical literature of our day, so that they, and the important lessons which they teach, may become known to all.

An appreciation of the simple fact that gunshot and other fractures involving the base of the skull are not hopeless lesions will practically do some good, at least, by causing more attention to be paid to their treatment, especially during the first days after the mishap, whereby better results will be secured, in individual cases, than otherwise would be obtained. And here, it is not improper to state, in a general way, that the "Medical and Surgical History of the War of the Rebellion" contains by far the grandest collection of surgical facts and observations that exists in any language; and that many of these cases and the inductions which they warrant should be published in the medical journals, so that they may be read by, and thus prove useful to, the profession at large.

The following example is reported, in the first surgical volume of the "Medical and Surgical History of the War of the Rebellion," under the head of "Balls lodged within the Cranial Cavity:"—

CASE 5. *Gunshot Fracture of Mastoid Process, etc.; Recovery.*—John W., aged 25, was wounded June 17, 1864, by a conoidal musket-ball, which entered the mastoid process of right temporal bone, and penetrated the brain. On the same day he entered the first division hospital of Fourteenth Corps; on the 26th he was sent to hospital No. 1, at Nashville; on the 29th, he was transferred to the Totten Hospital, at Louisville; and on July 12, he was admitted to the Soldiers' Home Hospital, at Indianapolis. He recovered; and on July 24, 1865, he was discharged from the service. The Pension Examiner, since, reports this patient entirely deaf in right ear, right eye irritable and injected, constant pain in right side of head, mental faculties impaired, with tendency to vertigo upon slight exertion, and rates the disability total and permanent. He also believed that the missile had not been removed (*loc. cit.*, p. 194).

The next example is also reported under the head of "Balls lodged within the Cranial Cavity:"—

CASE 6. *Base of Right Temporal Fractured by a Buckshot; Recovery.*—Wm. A. A. was wounded March 14, 1862, by a buckshot, which entered the right ear back of the meatus, penetrated the bone, and lodged within the cranium. On the 18th, he was admitted to the Academy Hospital, at New Berne; on April 20, he was furloughed; and on October 16, he was discharged from the service, and pensioned. On December 12, the Pension Examiner reports the wound still discharging, and the patient complaining of stiffness in the cords of his neck, with weakness of his right arm and inability to move it for five weeks, except with the assistance of his left hand. He was still weak, but gradually gaining strength. At times he was subject to slight deafness. In a subsequent report, dated October 19, 1866, he states that the missile still remained in the brain, that the wound was discharging pus, and that a sinus was opening back of the ear; that the man's general health was impaired, and that he rated the disability one-half and permanent (*loc. cit.*, p. 194).

The following example is likewise reported under the head of "Balls lodged within the Cranial Cavity":—

CASE 7. *Gunshot Fracture of Occipital at Base of Skull; Recovery.*—Wm. F. W., aged 20, was wounded December 23, 1864, by a conoidal ball which entered the right external ear, passed downward and backward, and lodged, fracturing the occipital bone. He was taken to the post hospital at Columbia, and on January 19, 1865, was sent to hospital No. 2, at Nashville. On July 20, he was transferred to the Crittenden Hospital at Louisville, thence to the Jefferson Hospital, Indiana, and on July 26 to Indianapolis, where he was mustered out of the service on August 26, and pensioned, his disability being rated one-half and probably permanent. The Pension Examiner reported that he suffered pain and vertigo after any active exercise (*loc. cit.*, p. 194).

The next example is also reported under the head of "Balls lodged within the Cranial Cavity":—

CASE 8. *Base of Left Temporal fractured by Gunshot; Recovery.*—John F. L. was wounded by a gunshot missile, probably a buckshot, which entered the mastoid process of left temporal bone close behind the middle of the pinna, passed slightly forward and lodged in the cranium, but its exact locality could not be ascertained. The pinna became adherent to the skin at the orifice of the wound. He suffered pain in the region between the point of entrance and the eyebrow. Active exercise, or stooping, would produce dizziness and pain. The vision and hearing of the left side were slightly impaired. He was discharged from the service on March 14, 1862, and pensioned, his disability being rated one-half and temporary (*loc. cit.*, p. 195).

The next two examples are reported under the head of "Missiles extracted from within the Cranium":—

CASE 9. *Gunshot Fracture involving Base of Temporal; Recovery.*—Wm. E. C. was wounded March 25, 1865, by a conoidal musket-ball which caused a penetrating fracture of the temporal bone. He was, on the same day, admitted to the 1st Division Hospital, Second Corps; thence he was sent to Washington, and placed in Campbell Hospital on the 28th, where the missile was taken out. On May 30, he was discharged. On May 15, 1868, the Pension Examiner reported that, from time to time, pieces of bone have been discharged from his ear; that there was a constant discharge from his ear, with a continued dull pain in his head: and that his jaw was anchylosed. His disability was rated three-fourths and temporary (*loc. cit.*, p. 197).

The protracted discharge of pus and fragments of bone from the ear, and the anchylosed condition of the jaw show conclusively what part of the os temporalis was broken in this instance.

CASE 10. *Gunshot Fracture of Left Orbit; Recovery.* — Andrew G. was wounded July, 1863, by a conoidal ball which struck on the outer side of the left orbit, penetrated behind the left eye and lodged; treated in field and Baltimore hospitals, and at Fort Independence, Boston Harbor. On January 5, 1864, he was discharged from the service. On April 28, the Pension Examiner reported that the ball had been extracted, but the vision of the eye was gone; that the eyeball was lessened one-third in size, and the pupil was insensible to light; that sudden shocks would give great pain in the eye; that there was almost complete loss of memory, and that much pain was felt in the head. His disability was rated total and permanent (*loc. cit.*, p. 197).

CASE 11. *Perforating Fracture of Base of Skull from Gunshot; Recovery.*— Robert E., aged 39, was wounded May 6, 1864, by a conoidal ball, which entered at the occipital bone, and escaped under the right eye; treated in field, Alexandria, Chester, and Philadelphia hospitals. Partial paralysis of lower extremities occurred. On August 29, 1865, he was discharged from the service and pensioned. On Sept 11, 1866, the Pension Examiner reported that his disability then consisted in partial paralysis of both lower extremities, imperfect vision, disturbance of mental faculties, and severe pain in head. In 1867, his disability was rated total and permanent (*loc cit.*, p. 209).

CASE 12. *Gunshot Fracture of Petrous Portion of Right Temporal Bone; Recovery; Not Pensioned.*—R. D. was wounded May 27, 1862, by a musket-ball, which entered above the right zygoma, carried away part of the external ear, fractured the petrous portion of the right temporal and emerged at the base of the occipital bone. He was delirious for one hour after the injury. Small pieces of bone were discharged from the wound, and his mind was impaired On August 22, he was admitted to the Ladies' Home Hospital, N. Y., where he was discharged from the service on September 23. Afterward, there was occasional pain, and his memory was impaired. He is not a pensioner (*loc. cit.*, p. 187).

CASE 13. *Gunshot Fracture involving Meatus Externus and Mastoid Process of Right Temporal; Recovery; Not Pensioned.*—R. W. H., aged 22, was wounded July 2, 1863, by a conoidal ball which entered anterior to top of right ear, passed backward and downward through the external ear, injured the mastoid process, and emerged at the back of his neck, six inches from the point of entrance. He fell senseless, was carried to the Seminary Hospital, and remained unconscious two days. On August 22, the orifice of entrance was filled with granulations, and that of exit with plastic lymph. The movements of his lower jaw became restricted; he could not raise the right eyebrow, nor close the right eyelids. He suffered much pain on injured side of head; the discharge came principally from the external meatus, whence a piece of bone also came away. On September 13, 1864, he was discharged from the service. He is not a pensioner (*loc. cit.*, p. 188).

CASE 14. *Gunshot Fracture of Mastoid Portion of Left Temporal; Complete Recovery.*—Wm. G. C., aged 21, was wounded on July 2, 1863, by a conoidal ball, which struck his head just behind the left mastoid process, passed upward and inward, and lodged in a depression of the skull. Also, he received flesh-wounds of scalp and left shoulder; treated in Seminary and York Hospitals. He stated that he became senseless, and remained so five days; and that he could not speak for nine days. Spiculæ of bone and the ball were removed, and cold water dressings applied, after which he improved rapidly. On August 24, the wound had filled with healthy granulations. A marked depression in the skull behind the mastoid process could be felt. Appetite, assimilation, and secretion were good, but headache recurred about three hours each afternoon. During September, he suffered from erysipelas of the face, but he recovered, and was returned to duty January 15, 1864. He is not a pensioner (*loc. cit.*, p. 215).

CASE 15. *Gunshot Fracture involving Left Ear and Mastoid Process; Recovered and returned to duty.*—Richard R. (coloured) was wounded February 20, 1864, by a conoidal musket-ball, which entered the left ear and passed through the mastoid process. On the 26th he was sent to the hospital at Beaufort, at which time there was some discharge from the ear and pain in the head, with obstinate constipation. He was treated expectantly, and by March 31 there was

marked improvement. On July 10, he was returned to duty, though still deaf (*loc. cit.*, p. 179).

It is believed that the last four patients recovered so completely as not to need assistance from pension or otherwise.

CASE 16. *Gunshot Fracture involving Right Ear and Mastoid Process; Complete Recovery.*—Philip G, aged 20, was wounded May 19, 1863, by a musket-ball which passed through the right ear and fractured the mastoid process; treated in field and Mound City Hospitals. On July 28, he was suffering from vertigo and headache, and the wound was still discharging. On August 21, a piece of necrosed bone, one-fourth of an inch in diameter and one-eighth of an inch in thickness, was removed He gradually improved, and, by the 30th, the wound was entirely healed. He also had intermittent fever, which soon subsided. He was placed on duty as nurse, and acted in that capacity until April 25, 1865, when he was returned to duty. He is not a pensioner (*loc. cit.*, p. 216).

CASE 17. *Shell Fracture of Basis Cranii; Complete Recovery.*—Thomas T. B., aged 24, wounded September 20, 1863; fracture of skull below and to the left of the occipital protuberance by shell; treated in Confederate hospitals at Ringgold and Richmond; paroled March 6, 1864, and admitted to hospital at Annapolis Junction; ten fragments of bone removed; discharged from the service September 20, 1864. He is not a pensioner (*loc. cit.*, p. 243).

CASE 18. *Gunshot Fracture of Left Temporal at its Base; Complete Recovery.*—G. S., aged 25, a conoidal ball entered just in front of the external meatus of left ear and lodged, probably in petrous portion of os temporalis, on August 29, 1862. No treatment until May 11, 1864, when he was admitted to the Columbian Hospital at Washington. An ineffectual attempt to extract the ball was afterwards made in Philadelphia. He was discharged from the service on June 16, 1865. He is not a pensioner (*loc. cit.*, p. 192).

It is believed that the last three patients also recovered so completely as not to need assistance from pension or otherwise.

CASE 19. *Gunshot Fracture of the Basis Occipitalis; Recovery.*—C. E. T., aged 29, wounded April 2, 1865, by a conoidal musket-ball which struck behind the right ear, fractured the occipital bone, and lodged in the neck, where it was afterwards found and extracted; wounded also in right foot; treated in field and Alexandria Hospitals. On July 17, he was mustered out and pensioned. On January 17, 1870, the Pension Examiner reports that the wound in his head often inflames and suppurates, and that dead pieces of bone exfoliate. He was also subject to cephalalgia, and his memory was greatly impaired (*loc. cit.*, p. 189).

CASE 20. *Perforating Fracture of Mastoid Portion of Left Temporal and Occipital Bones; Recovery.*—James R. G., aged 37, wounded April 6, 1865, by a conoidal ball which entered the left ear and mastoid process of os temporalis, passed obliquely backward through left hemisphere of cerebrum, and emerged at the centre of the occiput; treated in field and Washington Hospitals. Simple dressings only were applied to the wound. On July 15, he was discharged from the service, with total deafness of the left ear, and pensioned, his disability being rated total and temporary (*loc. cit.*, p. 209).

CASE 21. *Gunshot Fracture, involving the Basis of the Occipital, etc.; Recovery.*—Lewis K., aged 44, Chancellorsville, May 3, 1863. Fracture of occipital bone by a conoidal ball, which lodged beneath the mastoid process in sterno-mastoid muscle. Treated at Washington, and discharged November 7, 1863. The Pension Examiner reports on November 9, 1863, that the missile has not been extracted, and it is the cause of constant irritation and stiffness of the neck. On March 6, 1867, the Pension Examiner states there is vertigo, dimness of vision, and pain in head, and that the power of locomotion is somewhat interfered with (*loc. cit.*, p. 310).

CASE 22. *Gunshot Fracture, involving the Base of the Occipital; Recovery.*—Captain Frank G., aged 30, wounded May 8, 1864, by a conoidal musket-ball, which fractured the occipital bone at the protuberance; the fracture extended one inch and seven-eighths by one inch in width where widest; treated in field,

Alexandria, and Annapolis Hospitals; fragments of bone were removed, and ice applied. On June 15, several pieces of dead bone were extracted, followed by hemorrhage; the orifice was kept open by sponge-tents. In July, leave of absence was granted. On October 7 he was discharged from the service, and pensioned. On February 18, 1865, the Pension Examiner reported that there was partial paralysis of the optic nerve of both eyes, the right being most affected. Exertion caused pain in head and vertigo (*loc. cit.*, p. 233).

CASE 23. *Gunshot Fracture of Left Temporal at its Base; Recovered, and re-enlisted.*—Alexander J. C. was wounded June 30, 1862. The missile entered behind the left ear, and injured the mastoid process of the temporal bone; treated in field and Point Lookout hospitals; discharged from the service and pensioned on December 25. The wound had healed with an irregular cicatrix, and the hearing was somewhat affected. He re-enlisted on February 8, 1864, and was mustered out on June 26, 1865. The Pension Examiner reported, on July 31, 1866, that his hearing was affected, and there was a purulent discharge from the ear, and pain in its vicinity (*loc. cit.*, p. 131).

CASE 24. *Gunshot Fracture of Squamous and Petrous Portions of Left Temporal; Recovery* —Dominick B., aged 31, was wounded December 14, 1864, by a conoidal ball, which caused a penetrating fracture of the petrous and squamous portions of the left os temporalis; treated in field, Murfreesboro, Nashville, and Jefferson Barracks hospitals, where the case progressed favourably. On May 21, 1865, he was discharged from the service. On March 29, 1866, the Pension Examiner reported that exfoliation was still going on. The sinus immediately above the meatus was constantly discharging matter, as well as the meatus itself. The hearing on that side was completely destroyed. The mind was much impaired. He rated the disability total and temporary (*loc. cit.*, p. 187).

CASE 25. *Gunshot Fracture of Right Bony Ear; Missile lodged and not extracted; Recovery.*—Ellroy C., aged 23, admitted to hospital April 8, 1863, for gunshot wound of head. The missile entered just in front of right ear, and lodged in the meatus externus. When admitted, there was free purulent discharge from meatus; and deep therein a mass of florid granulations, supposed to cover the seat of a rifle-ball; deafness marked, but not complete; in front of corresponding tragus was the scar of a gunshot wound. The meatus was kept clean, and solution of argentum nitrate applied to the granulations. On May 9, the patient being under chloroform, two small pieces of carious bone were removed from a mass blocking up the canal. The meatus was freely incised, and a plug of sponge introduced. On the 20th he was discharged from the service. On August 4, 1863, the Pension Examiner reported that there was a ball lodged in his right temporal bone, causing necrosis and loss of hearing (*loc. cit.*, p. 234).

CASE 26. *Gunshot Fracture, involving Petrous portion, etc., of Right Temporal; Recovery.*—William F., wounded July 12, 1864, by a conoidal ball; on the following day he entered Mount Pleasant Hospital. A little above right ear was a scalp wound an inch and a half long. A fracture was diagnosed that extended into the petrous portion of temporal bone, and chipped off a piece of the mastoid process. The patient did well with simple dressings, rest, and gentle cathartics, till the 20th, when the wound was attacked with gangrene. On August 9, the slough separated, leaving a space five inches in diameter denuded of integument, fascia, and muscles. The denuded bone necrosed, and, on September 6, a fragment of the squamous portion of temporal was removed. Two days later other fragments were detached and extracted. Then the wound began to cicatrize rapidly. On December 3, the patient was reported to be nearly well. On February 14, 1865, he was discharged from the service, and pensioned. The necrosed bone is preserved in the Army Medical Museum, and figured in the "Medical and Surgical History of the War" (*loc. cit*, p. 188). He was reported to be partially deaf.

CASE 27. *Gunshot Fracture of Petrous Bone; Hemorrhage arrested by Tying the Common Carotid; Recovery* —J. S. H. was wounded February 14, 1862, by a musket-ball which struck the *left* ear, carried away the antitragus, perforated the temporal bone, and escaped at the masseter on right side, dividing Steno's duct. He was sent to the Third Street Hospital at Cincinnati, where, on March

2, during an effort to remove fragments of the petrous bone, there was copious hemorrhage, which was treated, but not arrested, by the free employment of persulphate of iron. Hemorrhage occurred on the 8th; on the 22d, the carotid was tied, under chloroform; ligature came away on the twelfth day. The patient rapidly regained his strength; and, on July 23, was discharged convalescent. He was last heard from in 1868. He had facial paralysis (*loc. cit.*, p. 313).

In this case the missile passed almost transversely from left to right, and must have extensively shattered the base of the skull. It seems truly wonderful that the man did not die on the spot when struck. The case is also valuable as showing the utility of tying the common carotid for hemorrhage from the meningeal arteries. The following example belongs to the same category:—

CASE 28. *Shell Fracture in Left Temporal Region, which probably extended into the Basis of Cranium; Hemorrhage from Middle Meningeal Artery; Deligation of Left Common Carotid; Recovery.*—Wm. C. A., aged 19, was wounded by a fragment of shell in the left temporal region, December 28, 1862; treated in field and St Louis hospitals. On January 18, hemorrhage, amounting to twelve ounces, occurred from the middle meningeal artery, which, all other means failing, was arrested by tying the left common carotid artery, and did not recur. On May 28, 1863, he was discharged from the service. In March, 1868, he was a pensioner, his disability being rated total and temporary. The Pension Examiner reported that he had dizziness and faintness on exertion or stooping, partial anæsthesia of the left side of his face, and was compelled to keep his room in the cold winters of Madison, Iowa, from liability to freeze the left ear and side of face. He was known to be still in tolerable health on June 4, 1872, almost ten years after the casualty and the operation (*loc. cit.*, p. 314).

The last two cases, then, aside from fracture of the basis cranii, are very important, inasmuch as they serve to illustrate the principle of arresting an outflow of blood from the middle meningeal artery, when wounded, by tying the common carotid.

CASE 29. *Perforating Fracture of Cranial Base from Gunshot; Recovery.*—John F. L., aged 21, was wounded August 11, 1864, by a conoidal musket-ball, which caused a perforating fracture of the base of the skull. He was treated in field and Keokuk hospitals. Simple dressings only were applied to the wound. On August 25, 1865, he was discharged from the service and pensioned. There was partial hemiplegia of right side, and the disability was rated total (*loc. cit.*, p. 208).

CASE 30. *Perforating Fracture involving Base of Skull; Recovery.*—H. E., aged 23, was wounded September 19, 1863, by a conoidal ball which entered at a point one-fourth of an inch behind left ear, and just in front of the lower part of mastoid process, opened the meatus, and emerged from the forehead at a point two inches above outer canthus, and one inch above superciliary ridge of left eye. Treated in field, Chattanooga, Bridgeport, Cumberland, Louisville, and Jeffersonville hospitals. Some small spiculæ of bone were removed from the upper orifice. No unfavourable symptoms appeared. On February 29, 1864, he was returned to duty. On August 31, 1865, he was discharged from the service and pensioned. In October, 1867, the Pension Examiner reported that there was total loss of hearing in left ear, and of sight in left eye, and that there was mental imbecility unfitting him for business pursuits and for manual labour (*loc. cit.*, pp. 233, 234).

CASE 31. *Gunshot Fracture of Mastoid Process, etc.; Returned to duty.*—R. W. W. was wounded December 13, 1862, by a conoidal musket-ball which passed from behind forward through the right mastoid process and concha. Treated in field and Washington hospitals. He recovered, except from the

deafness of right ear, and, on April 11, 1863, was returned to duty (*loc. cit.*, p. 180).

CASE 32. *Gunshot Fracture involving Internal Ear; Recovery.*—Wm. B. H. was wounded May 3, 1863. The missile entered in front of the external meatus, and lodged in the internal ear. Treated in field, Washington, and Philadelphia hospitals. He was discharged from the service on April 6, 1865, and pensioned. The ball remained in the wound, and could be felt in its place of lodgment. The sense of hearing was completely lost in injured ear. The sense of taste was also lost, and he suffered from vertigo (*loc. cit.*, p. 180).

CASE 33. *Perforating Fracture beneath Left Cerebral Hemisphere; Recovery.*—Eugene P., aged 23, was wounded June 16, 1864, by a conoidal musket-ball which entered at the inner angle of left eye, passed through the brain, and emerged behind the left ear. Treated in field, Rhode Island, and Albany hospitals. The treatment consisted chiefly in dressing the wound, which had cicatrized by December 22. His general health being good at that date, he was discharged from the service and pensioned, the vision of his right eye being obscured. On March 7, 1867, the Pension Examiner reported that there was a discharge of pus from the orifice of entrance, and through the right nostril and upper part of posterior nasal cavity into the mouth. There was constant headache; he could not stoop without becoming dizzy, and his eyesight was imperfect. At night, pus ran into his mouth so that he was often obliged to rise and cleanse his throat in order to sleep. His disability is rated total and permanent (*loc. cit.*, p. 209).

CASE 34. *Perforating Fracture involving Base of Left Temporal, etc.; Recovery.*—Charles B. was wounded May 5, 1862, by a musket-ball which entered the left side of his head, passed through the zygoma, and emerged at the mastoid process of the temporal bone. On the 10th he was admitted to General Hospital at Baltimore. Four fragments were removed from the squamous portion of left temporal, the largest measuring one-fourth by one inch. He improved rapidly, and, on August 6, was discharged from the service, having recovered with paralysis of the parts supplied by the left *portio dura*. On April 25, 1865, the Pension Examiner states that the sight of his left eye and the hearing of his left ear are destroyed, and that twenty-eight pieces of bone have been discharged from the wound. In August, 1869, he was a pensioner, his disability being rated at one-half (*loc. cit.*, p. 233).

CASE 35. *Gunshot Fracture involving Base of Skull; Recovery.*—Sergeant A. R. was wounded Sept. 14, 1862, by a conoidal ball, which entered the left side of face at base of nose, passed obliquely backward, and emerged behind the right ear, separating the mastoid process of temporal bone. He became insensible. There was bleeding from mouth, ear, and eye for several hours after consciousness returned; treated in field, Washington, and New York hospitals. The motor oculi, the trigeminus, the portio dura, and other nerves on right side were paralyzed. There was loss of vision of right eye and of sensation and mobility of right side of face. He was unable to swallow or open his mouth. Febrile action set in, which, together with headache and profuse suppuration of wound rapidly reduced his strength. He quickly became weak, pale, and emaciated; skin moist, appetite poor; pulse regular, slow, and compressible. The right eye was lachrymose, and the mouth drawn toward left ear. The face-wound healed, but the head-wound continued to discharge pus profusely. On March 21, 1863, he was discharged from the service, his disability being rated at one-half (*loc. cit.*, p. 165).

CASE 36. *Gunshot Fracture involving Mastoid Portion of Left Temporal; Recovery.*—James H. Q., aged 21, was wounded May 19, 1864, by a conoidal musket-ball which penetrated the outer table of left temporal bone, passed downwards and chipped off a portion of the mastoid process. He remained on the field three days without attendance; was then removed to Fredericksburg, and subsequently treated in Washington and Maine hospitals. Another wound involved his axilla. Simple dressings were used. On July 23d, a piece of the outer table of temporal, about three-fourths by one-half inch in size, was removed. Afterward, the patient slowly recovered. On Feb. 18, 1865, he was transferred to the Veteran Reserve Corps. On June 10, he was discharged from the ser-

vice, and pensioned. The wound had healed, but active exercise caused dyspnœa. Subsequently the Pension Examiner states that he suffered from deafness, headache, vertigo, paralysis of arm, and inability to bear exposure to heat; disability rated total and permanent (*loc. cit.*, p. 227).

CASE 37. *Gunshot Fracture involving Mastoid Portion of Right Temporal; Recovery.*—George S., wounded May 3, 1863, by a conoidal ball which fractured the mastoid portion of right temporal bone. On the 5th, fragments of bone were extracted at a field hospital. On the 26th, he was sent to Alexandria; and on Sept. 16th, returned to duty. On August 26, 1864, he was discharged from the service, and pensioned. His pension was increased in September, 1867, reduced in September, 1869; and, in March, 1870, he applied for an increase of pension, claiming that his disability had increased. The Pension Examiner certified that there was a depression in the mastoid portion of os temporalis, that he complained of neuralgic pains in the right side of head, and of deafness of right ear; but after several weeks of observation the Examiner did not recommend any increase over his present rate of three-fourths disability (*loc. cit.*, p. 233).

CASE 38. *Gunshot Fracture involving Mastoid Portion of Left Temporal; Recovery.*—Lieut. Isaac B., aged 28, was wounded Sept. 14, 1862, by a round musket-ball, which entered the mastoid portion of left temporal bone, about one and a half inches above and behind the meatus, and lodged. After a few minutes of insensibility, he attempted to rise, but being unable to control his limbs he would stumble constantly and fall. He states that he introduced his little finger more than an inch into the wound, and could feel the brain substance. Spiculæ of bone were removed; treated in field, Frederick, Washington, and New York hospitals. Simple dressings were applied. For several weeks he staggered, and had fever, but never delirium. Spiculæ of bone continued to come away for some weeks, but the wound gradually healed. He returned to his regiment, and on October 26, 1864, was mustered out. On March 29, 1866, he was examined. A prominent scar marked the spot where the ball entered, which, as he believed, still remained in the cranium. He was subject to pain in the back part of head. His intellect did not seem to be impaired. On Oct. 7, 1867, the Pension Examiner reported him as nearly unfit for any business, owing to vertigo, headache, and dizziness, and rated his disability as total and permanent (*loc. cit.*, p. 225).

CASE 39. *Gunshot Fracture involving Mastoid Process of Temporal, and Base of Occipital; Recovery.*—Capt. Winfield S. B., aged 23, was wounded Aug. 16, 1864, by a conoidal ball which fractured the mastoid process of the temporal bone and injured the base of the occipital; treated in field, and Philadelphia hospitals. On the 20th, he was delirious, and the wound had an unhealthy aspect. On the 23d, hemorrhage to the amount of eight ounces occurred from the posterior auricular and some of the small deep cervical branches; it was arrested with styptics, compress, and roller. On the following day it recurred, and about five ounces were lost. Afterwards the case progressed favourably. On December 7, several spiculæ of necrosed bone came away, and, on the 30th, a large portion of the mastoid process was removed. In January, he was mustered out of the service. On May 15, 1865, he was a pensioner, his disability being rated total and permanent (*loc. cit.*, p. 224).

CASE 40. *Perforating Fracture of the Mastoid Portion of both Temporals; Recovery.*—Lieut. W. H. C., aged 22 (Confederate), was wounded Sept. 1, 1864, by a conoidal musket-ball, which entered the cranium one inch above the mastoid process, and emerged on the opposite side, where the presence of cerebral matter left no doubt that the brain was injured. On the next day he was taken to a field hospital, perfectly unconscious, with stertorous breathing. Toward evening, he became conscious and restless, complaining of loss of vision, and inability to raise his head. Toward midnight, he began to scream, and for three weeks did so incessantly, even during sleep. On the 20th, he suddenly became quiet, and answered questions coherently. The left side seemed paralyzed, as he could not use that hand or leg; face drawn to the right, and there was some difficulty in swallowing; secretions natural. He had constant priapism with seminal emissions. He rapidly improved, but he seemed unable to guide his movements, and the power of his will over motion seemed lost. Several spiculæ of

bone came away. About the seventh week, all discharge from the wound had ceased. His left pupil seemed permanently dilated and intolerant of light. On December 8, he was sent to the Provost Marshal for exchange (*loc. cit.*, pp. 208, 209).

This case is reported in the "Medical and Surgical History of the War of the Rebellion," under the head of "Perforating Gunshot Fractures of the Skull." The next case belongs to the same category.

CASE 41. *Perforating Fracture of Basis Cranii from Gunshot; Recovery.*—Charles C. T. (Confederate), aged 17, was wounded Aug. 30, 1864, by a ball which entered the forehead just above the *left* eye, and emerged behind the *right* ear. He was retired by an examining board on January 3, 1865. The vision of both eyes was affected, and he was permanently disabled (*loc. cit.*, p. 208).

In this case the missile passed obliquely downward and backward from left to right through the os frontis and the cranial base. It is almost wonderful that he did not die on the spot when he was struck.

CASE 42. *Gunshot Fracture of Left Temporal at its Base; Recovery.*—Albert W. B., aged 22, was wounded Aug. 17, 1864, by a conoidal musket-ball which entered the left side of head, two inches in front of ear, and emerged one inch and a half behind ear, fracturing the mastoid portion of temporal bone, etc.; treated in field, Chattanooga, Jeffersonville, St. Louis, and Wisconsin hospitals. Several pieces of the mastoid process were removed. On May 23, 1865, he was mustered out of the service. In 1868, he was a pensioner at four dollars per month, his disability being rated at one-half and temporary. Afterwards, his pension was increased to fifteen dollars per month, the Pension Examiner having certified as follows: "The wound leaves him with complete loss of hearing, taste, and smell on left side, with partial blindness of left eye from retinitis; also with paralysis of all the facial muscles on left side, inability to close the left eyelids, and tenderness of eyeball. The condition of the brain induces vertigo and unsteadiness of gait. He cannot stoop for many moments without complete syncope. The deformity is very considerable, causing an appearance of imbecility when seen from the injured side. So far as known, his habits are good. The disability seems permanent in character, and, in my opinion, is total" (*loc. cit.*, pp. 234, 235).

CASE 43. *Gunshot Fracture involving Right Malar and Temporal Bones; Recovery.*—Isaac P. B., aged 24, was wounded, April 7, 1862, by a missile which passed through the right malar and temporal bones. The case progressed finely. He was treated at City Hospital, St. Louis, and at Camp Dennison, where he was discharged from the service, Aug. 14, 1862. He re-enlisted July 18, 1863, and on January 18, 1865, was again discharged and pensioned. In May, 1865, there was partial paralysis of the right side of face, and deafness of the right ear; his disability was rated one-half and permanent (*loc. cit.*, p. 189).

In this case the projectile passed also through the basis of the cranium. Nevertheless, the man recovered so far as to be accepted on re-enlistment.

CASE 44. *Gunshot Fracture involving the Base of Skull; Recovery; Not Pensioned.*—Lieutenant-Colonel H. A. F. was, on January 15, 1863, admitted to the Officers' Hospital at Philadelphia, with a gunshot fracture of the occipital bone at its protuberance. A portion of the outer table was necrosed and came away. There were symptoms of compression, but the wound was nearly healed, and the discharge was very slight. On April 1, a piece of bone, the size of a finger-nail and one-sixteenth of an inch thick, was removed from the outer table. No further complication occurred, and he returned to duty in the same month. He is not a pensioner (*loc. cit.*, p. 216).

It is hoped that this officer recovered so completely as not to require the assistance of a pension.

CASE 45. *Gunshot Fracture of Left Mastoid Process; Recovery.*—George H. M. was wounded Aug. 30, 1862, by a musket-ball which entered behind the mastoid process of *left* temporal bone, fracturing a part thereof, passed obliquely forward, and emerged just exterior to the right ala nasi; treated in hospital at Alexandria. The muscles of the lower jaw were rigid, and splinters of the mastoid process were discharged from time to time. On Oct. 23, he was discharged from the service; wound then not entirely healed. On March 6, 1867, the Pension Examiner reported that the left lachrymo-nasal duct was closed, the sac constantly becoming distended with secretion; that there was hyperæsthesia of left side of face; and that the patient could not bear exposure to cold without much suffering. In March, 1868, his disability was rated at one-half and permanent (*loc. cit.*, p. 172).

CASE 46. *Gunshot Wound of Head; Direct Fracture of Basis Cranii; Recovery.*—Andrew W., aged 35, was wounded May 14, 1864, by a conoidal ball which entered near the lambdoidal suture, and emerged in front of, and below the left ear, having passed through the base of the skull. He was discharged from the service June 26, 1865, and pensioned. The hearing of his left ear was destroyed, the muscles of left side of face were paralyzed, and he was unable to close his left eye, the sight of which was also affected. His disability was rated total and temporary (*loc. cit.*, p. 172).

CASE 47. *Gunshot Fracture involving Basis of Right Temporal; Recovery.*—Walter W., aged 37, was wounded April 1, 1865, by a conoidal ball which entered above the anterior zygomatic articulation, fractured and depressed the temporal bone, and emerged just above the right meatus; treated in field and Washington hospitals. On the 22d he had slight hemorrhage from the common temporal, which was ligated. The wounds of entrance and exit were connected, when it was found that a small portion of bone at the point of exit was denuded of pericranium. Subsequently, the denuded portion was removed. By June 17th, he had fully recovered; and on the 29th, he was discharged from the service. In July, 1868, he was a pensioner, his disability being rated total and permanent (*loc. cit.*, pp. 225, 226).

CASE 48. *Gunshot Fracture involving Base of Frontal, Sphenoid, and Ethmoid; Recovery.*—Sergt. J. C., aged 20, was wounded July 2, 1863, by a conoidal ball which entered just behind the outer angle of the *right* eye, passed through the orbital plate and the great wing of sphenoid, and emerged at a corresponding point behind *left* eye, having torn away nearly all the orbital plate; orifice of exit fully one inch and a half in diameter; that of entrance about half an inch. On the 8th, he was transferred to the Satterlee Hospital at Philadelphia. The tunics of right eye were hanging out and much tumefied, about as large as a black walnut, and sloughing. The left eye was shrunken, its humours evacuated, and its tunics slightly inflamed. The missile passed apparently beneath the cribriform plate of the ethmoid, destroying a portion of the latter with the lachrymal bones, and severing the optic nerves; profuse discharge of pus from both wounds; sense of smell as well as sight entirely destroyed. Patient in a tolerably good condition, but restless; appetite moderate, tongue slightly furred, and pulse about 90. Flaxseed dressings applied. On the 10th, the external angular process of frontal bone was extracted from wound of entrance; also several small spiculæ. On the 13th, a small fragment of the great wing of the left sphenoid was removed. On the 17th, the slough came away from right eye. No symptoms of cerebral disturbance had appeared. On the 19th, there was considerable œdema of left eye, and more inflammation. On the 21st, a thin plate of bone was discharged from the nose, apparently a piece of the perpendicular plate of the ethmoid. On the 25th, another small piece of bone came away from the left wound; discharge still profuse, but wounds granulating finely. Night sweats occurring, quinia and sulphuric acid were given. On Aug. 8, the wound of entrance had healed; that of exit was rapidly closing. On Sept. 22, 1864, he was discharged from the service and pensioned (*loc. cit.*, p. 326).

CASE 49. *Gunshot Fracture involving Base of Frontal and Sphenoid Bones; Recovery; Death 4½ years afterwards from Phthisis Pulmonalis.*—Wm. B., aged 24, was wounded June 2, 1864, by a conoidal ball which entered the right temple two inches from the orbit, and, passing obliquely forward and inward,

emerged through the right eyeball; treated in field, Washington, and Philadelphia hospitals. On June 28, 1865, he was discharged from the service. The right eye was destroyed, and the sight of the left one was lost. In March, 1868, he was a pensioner at twenty-five dollars per month. On Jan. 27, 1869, he died of phthisis pulmonalis, being totally blind at the time of death (*loc. cit.*, p. 326).

The last two cases are reported under the head of "Gunshot Wounds of the Orbital Region." The next case is reported under the head of "Exfoliations after Depressed Gunshot Fractures of the Skull":—

CASE 50. *Gunshot Wound involving Face and Base of Skull; Recovery.*—Charles E. P., aged 19, was wounded June 1, 1864, by a gunshot missile which entered the face and emerged behind the ear, probably traversing the meatus in its course. He was taken prisoner and carried to Richmond. By July 31, the temporal bone had become partially exposed, some fragments thereof had escaped, and the sense of hearing was destroyed. Excepting an occasional pain in ear, patient was doing well. He was paroled afterward. On June 29, 1865, he was discharged from the service and pensioned. On Aug. 31, the Pension Examiner reported that there was a purulent discharge from the wound. On the 28th, a piece of bone came away, over an inch in length, making in all that had come out of the jaw and ear, in consequence of the wound and gangrene, twelve pieces. There is total loss of external ear, which, with the paralysis, causes great deformity (*loc. cit.*, p. 187).

The following case is reported under the head of "Perforating Gunshot Fractures of the Skull":—

CASE 51. *Perforating Fracture involving Base of Skull, etc., from Gunshot; Recovery.*—Hugh C. was wounded Sept. 17, 1862, by a conoidal ball which entered the cranium just above the *right* eye, and lodged in the *left* side of neck four inches below left ear. The missile was extracted. On Oct. 8, he was admitted to hospital at Smoketown. On Dec. 20, he was discharged from the service. On Feb. 18, 1863, he was examined for pension. Partial amaurosis of both eyes existed; otherwise he had good health. Subsequent information states that he was unable to work and that his sight was impaired. His disability is rated total and permanent (*loc. cit.*, p. 208).

In this case the missile passed obliquely downward and backward, between the orbits, but injuring both optic nerves in such a way as to produce permanent amblyopia.

CASE 52. *Gunshot Fracture of the Basis of Left Temporal; Recovery.*—L. W. E., aged 26. New Market, Va., May 15, 1864. Fracture of left mastoid process by musket-ball. Treated at Frederick, Baltimore, and Elmira. Transferred to Veteran Reserved Corps, Jan. 3, 1865; discharged July 24, 1865. The Pension Examiner states on April 23, 1868, that he is deprived of the sense of hearing in left ear, and of the power to close the left eyelids, and the muscles of the left side of his face, generally, are paralyzed (*loc. cit.*, p. 310).

In this case the internal ear and the portio dura of left side were also involved in the gunshot lesion.

CASE 53. *Gunshot Fracture involving the Base of Os Frontis, etc.; Recovery.*—Lieut. Isaac N. M., aged 23, was wounded May 19, 1864, by a conoidal ball which entered above the inner angle of right eye, fractured the supra-orbital ridge, and lodged in front of the right ear. The ball and a portion of the supra-orbital ridge were removed; treated at Georgetown and Annapolis. On Aug. 15, he was discharged from the service, and, afterwards, pensioned. On Sept. 15, 1865, the Pension Examiner reports that he has much pain in the forehead, that any exposure to the heat of the sun, or exercise, causes giddiness, with severe pain in the other eye, and dimness of vision; and rates the disability as total (*loc. cit.*, p. 232).

The next example is of much importance because the lesion resulted from a blow over the left eye:—

CASE 54. *Base of Os Frontis Fractured by a Blow; Orbital Roof, etc., Depressed; Recovery.*—James W. was admitted to the Balfour Hospital at Portsmouth on April 10, 1865, with compression of the brain resulting from a fracture of the frontal bone caused by a blow over the left superciliary ridge, received a few hours before admission. The roof of the orbit was depressed, as well as the lower part of the skull. An operation was deemed inexpedient. Cold applications to the head, blisters to the nape of the neck, and stimulants, constituted the treatment (*loc. cit.*, p. 50).

The last case is reported under the head of "Fractures of the Cranium by Blows from various Blunt Weapons," and bears a strong resemblance to two of the writer's cases which were mentioned in the forepart of this article.

CASE 55. *Gunshot Fracture of Right Orbital Plate of Os Frontis, etc.; Recovery.*—Abram D. M., aged 21, was wounded Aug. 28, 1864, by a conoidal musket-ball which penetrated the frontal bone just above the right eye, and, passing downward through the orbit, emerged near the right ear; treated in Sandy Hook, Baltimore, and Philadelphia hospitals. The treatment seems to have been of a general character. He recovered, and, on Feb. 13, 1865, was transferred to the Veteran Reserve Corps. He is not a pensioner (*loc. cit.*, p. 208).

It is hoped that this man's recovery was so complete that he did not need a pension.

CASE 56. *Shell Fracture of Orbital Ridge, Orbital Plate, etc.; Recovery.*—Adam C., aged 21, was wounded June 1, 1864, by a piece of shell which struck the outer angle of the orbital ridge, fractured the orbital plate of os frontis, and partially destroyed right eye; treated in field, Alexandria, and Philadelphia hospitals. On the 28th, two pieces of the orbital ridge were removed; patient's general condition at this time excellent, but there was some cerebral irritation. On July 1, an incision in the scalp was made, and two pieces of bone removed; one the size of a filbert, the other as large as a pea. Simple antiphlogistic treatment was employed, and the patient progressed finely. On April 13, 1865, he was discharged from the service by reason of loss of sight of the right eye. On March 26, 1868, he was a pensioner, his disability being rated at one-half and permanent. The vision of his right eye was totally destroyed, while that of his left eye was not affected (*loc. cit.*, p. 230).

This man also made a very good recovery, under simple antiphlogistic treatment; and it should here be stated that the patients belonging to this category who were treated antiphlogistically generally made the best recoveries.

CASE 57. *Gunshot Fracture involving Anterior Cranial Fossa; Recovery.*—John T. C., aged 24, was wounded April 2, 1865, by a conoidal ball which entered just above the left zygoma, crossed the left orbit, and emerged through the outer and upper part of the right orbit, destroying both eyes. On May 26, the wound of entrance was already healed, and his general health was good, but lying on the left side would cause headache. The sense of smell, as well as that of sight, was entirely destroyed. Cold-water dressings were applied, and small pieces of bone were taken from the wound of entrance. On June 12, he was discharged from the service and pensioned at twenty-five dollars per month (*loc. cit.*, p. 327).

CASE 58. *Gunshot Fracture involving Anterior Cranial Fossa; Recovery.*—Calvin F. (Confederate), aged 18, was wounded May 31, 1864, by a conoidal ball which entered one inch above the left zygoma, passed through the left orbit, destroying the eye, and emerged from the inner wall of right orbit carrying with it the right eye. On June 10, he was transferred to the Lincoln Hospital at Washington, in

a delirious condition. Erysipelas had attacked the wound and he suffered considerably. Simple dressings were applied. Tonics were administered. The wound gradually healed. There was a loss of the senses of taste and smell as well as of sight; but that of taste became almost entirely restored. On Oct. 1, he was transferred to the Old Capitol Prison for exchange (*loc. cit.*, pp. 243, 244).

In the last two cases the ethmoid bone was also broken, the result of which was that the sense of smell was completely destroyed.

CASE 59. *Gunshot Fracture involving the Base of Os Frontis; Recovery.*—Samuel B., aged 17, was wounded August 30, 1862, by a projectile which entered the frontal bone a little to the right of the median line one inch above the nasal eminence, and emerged at the external angular process (right). He was admitted to the Episcopal Hospital at Philadelphia on Dec. 16. There was a discharge of pus from the loose tissue of the upper eyelid, and from the wound of entrance, which was still open. Pieces of bone had been discharged therefrom at different times before his admission. The wound of exit had closed and the opening formed for the escape of pus was filled with a mass of granulations. The sight of the right eye was dim. On the 20th, another piece of bone escaped from the wound of entrance, which afterwards closed. On March 11, 1863, he was discharged from the service and pensioned. Subsequently, the Pension Examiner reports that exfoliation has followed with great injury to right eye and ear. His disability is rated at three-fourths and doubtful (*loc. cit.*, p. 187).

CASE 60. *Gunshot Fracture of the Base of Os Frontis; Left Eyeball Wounded; Recovery.*—George G., aged 24, was wounded Oct. 19, 1864. The ball passed through upper lid of left eye, penetrated the orbital plate and lodged, evacuating the humours of the globe. On the 23d he was sent to Satterlee Hospital. Diet strictly attended to and room darkened. No attempt made to find the ball. Pulse decidedly cerebral, slow, and irregular. Erysipelas supervened. In the forepart of November he complained of pain and twitchings in his feet, and of occasional headache. Toward the end of November he began to improve, and was discharged from the service on January 7, 1865, to all appearances well. The Pension Commissioner stated, in July, 1868, that he was pensioned at eight dollars per month, his disability being rated total and permanent (*loc. cit.*, p. 330).

CASE 61. *Gunshot Fracture of Right Mastoid Process, Basis Cranii, and Left Orbit; Recovery.*—James N., aged 28, was wounded Sept. 20, 1862. A conoidal musket-ball entered the mastoid process of *right* temporal, and emerged at the outer canthus of *left* eye, destroying the organ and tearing the lower lid. Treated in field, Philadelphia, and Germantown hospitals. Becoming subject to fainting fits, epileptiform in character, potassium bromide was administered, and in a few weeks they ceased. On May 12, 1864, he was transferred to the Veteran Reserve Corps. In November, 1867, he was able to follow his usual occupation of carpet-weaving (*loc. cit.*, p. 331). *Thus his recovery appears to have been almost complete.*

CASE 62. *Gunshot Fracture of the Base of Left Temporal, Frontal, and Ethmoid Bones; Recovery.*—John H. S., aged 24, wounded July 30, 1864; a conoidal musket-ball entered the *left* temporal region, passed diagonally across the *left* orbit, and emerged through *right* nostril, destroying the left eye entirely; transferred from one hospital to another several times. On Feb. 10, 1865, he was discharged from the service. In 1869 he was a pensioner; disability rated total. Mastication was difficult, sense of smell affected, left eye destroyed, and sight of right eye impaired. His mind had become weakened, and he complained of dull pain in head (*loc. cit.*, p. 331).

The history of this case clearly shows that the left glenoid fossa and the ethmoid bone were injured by the missile in its course.

CASE 63. *Gunshot Fracture involving the Anterior Cranial Fossa; Recovery.*—George T. was wounded Jan. 11, 1863; a pistol-ball entered the inner portion of right supra-orbital ridge near base of nose, and, passing outward and slightly downward, fractured the orbital plate and lodged in the frontal sinus. The course of the missile was traced along the fracture as far as the bottom of the orbit;

globe of eye destroyed. Subsequently, the inflammation ran very high, and the pain was great. On April 3 he was discharged from the service. In March, 1869, his disability was reported to be three-fourths and permanent (*loc. cit.*, p. 331).

CASE 64. *Gunshot Wound of Right Eye with Fracture of the Base of Skull; Recovery.*—John W., aged 21; wounded May 11, 1864. Fracture of orbital and temporal bones, with loss of right eye caused by the missile; treated in field, Washington, and Philadelphia hospitals. Discharged from the service May 19, 1865, and pensioned (*loc. cit.*, p. 342).

CASE 65. *Gunshot Wound of Left Eye with Fracture of the Base of Skull; Recovery.*—George F. W., aged 22; wounded May 6, 1864. Fracture of orbital and temporal bones with loss of left eye caused by the missile; treated in Washington, Philadelphia, New York, and Albany hospitals; right eye sympathetically affected. Discharged from the service Dec. 13, and pensioned (*loc. cit.*, p. 342).

CASE 66. *Gunshot Wound of Left Eye with Fracture of the Base of Skull; Recovery.*—Alexander N. W.; wounded at Atlanta. Fracture of temporal bone with loss of left eye caused by the ball; treated in field, Chattanooga, and Nashville hospitals. Transferred to Veteran Reserve Corps Dec. 21, 1864 (*loc. cit.*, p. 342).

CASE 67. *Gunshot Wound of both Eyes with Fracture of the Base of Skull; Recovery.*—Wm. H. D., aged 22; wounded June 20, 1864; a conoidal ball entered the inner canthus of right eye, passed through the base of nose and left eye, and emerged at the left temple, destroying both eyes; transferred from hospital to hospital until October 27, 1864, when he was discharged from the service and pensioned (*loc. cit.*, p. 327).

CASE 68. *Gunshot Wound of Eyes with Fracture of the Base of Skull; Recovery.*—H. C. G., admitted to regimental hospital June 28, 1864, with gunshot fracture of temporal bone. A conoidal ball entered right side of head, one inch and a half from outer angle of right eye, and emerged near outer angle of left eye. On the 29th he was left in the enemy's hands, but was afterwards exchanged, and on Oct. 5 discharged from the service, being entirely blind (*loc. cit.*, p. 327).

CASE 69. *Shell Fracture involving the Anterior Cranial Fossa; Recovery.*—John W. W. was wounded Sept. 20, 1863, by a fragment of shell which caused a scalp-wound, grazed the orbital ridge, and destroyed the right eye. On Dec. 21 he was discharged and pensioned. On Feb. 15, 1864, the Pension Examiner reports that the right eye was collapsed, the left eye torn from its proper connections by the blow, and the man totally blind (*loc. cit.*, p. 327).

Such a blow must inevitably fracture the orbital plates of the os frontis, and probably some other bones in the cranial base.

CASE 70. *Gunshot Fracture of the Base of Skull; Recovery.*—Wm. H. F., aged 25, was wounded March 25, 1865, by a conoidal ball which entered the right temple near the outer angle of eye, passed through the orbital portion of the sphenoid bone on both sides, severed in its course the optic nerves of both eyes, and escaped, the point of exit being directly opposite the point of entrance. He complained much of pain in the head, and could not tolerate opium or morphia. Nervines were administered freely, and good wine in small quantity. On April 26 the wound was nearly healed. On June 13 he was discharged and pensioned, being totally blind (*loc. cit.*, pp 327, 328).

CASE 71. *Gunshot Wound of the Left Eye with Fracture of the Base of Skull; Recovery.*—Wm. B., wounded June 28, 1862; a conoidal ball destroyed the left eye, and passing backward, outward, and upward, fractured the orbit, and emerged at a point two inches above and behind the same eye; in Baltimore and Pennsylvania hospitals until July, 1864, when he was mustered out. On April 23, 1869, the Pension Examiner reports that the bones of the left orbit are all broken away, leaving great deformity (*loc. cit.*, p. 329).

CASE 72. *Gunshot Wound of Left Eye with Fracture of the Base of Skull; Recovery.*—Col. P. R. G., wounded May 5, 1864; a conoidal musket-ball entered just above the inner angle of left eye, passed backward, downward, and outward across the orbit, behind the malar bone and zygoma, and lodged near the

left ear. The missile fissured the os frontis quite deeply at inner extremity of supra-orbital ridge, and must have penetrated the frontal sinus, as well as broken the orbital plate. The eye was destroyed; and in extracting the ball Steno's duct was severed. On June 21 he was mustered out and pensioned. The injury has affected his brain. He suffers from dizziness and confusion of ideas; the dizziness becoming so great at times as to compel him to grasp objects that are near for support. On Feb. 1, 1870, he was totally disabled by reason of pneumo-hydrothorax (*loc. cit.*, p. 330).

The last thirteen cases are reported in the first surgical volume, under the head of "Gunshot Wounds of the Orbital Region" (*loc. cit.*, pp. 325–345), but in all of them the base of the skull was fractured more or less extensively. The next sixty cases are similarly reported.

CASE 73. *Gunshot Wound of Left Eye with Fracture of Basis Cranii; Recovery.*—John F. L., aged 24, wounded May 6, 1864, by a conoidal musket-ball which entered the left eye and lodged at the left temple. The bullet was extracted and the wound dressed in the usual manner. On Feb. 16 he was discharged and pensioned. On Oct. 22, 1866, the Pension Examiner reports that there is depression of the skull over the left eye, resulting in paralysis of left side [of face?] and of upper and lower extremities [of right side?]. He can but just drag himself about (*loc. cit.*, p. 330).

CASE 74. *Gunshot Wound of Left Eye with Fracture of Anterior Cranial Fossa; Recovery.*—Jack K. (Confederate), aged 35; wounded July 21, 1863; a conoidal ball passed from right to left, carried away the nose from root to end of osseous part, destroyed the left eye, and emerged from the outer angle of left orbit. It barely missed the right eye. Portions of brain-tissue escaped. Cold water dressings were applied; opiates and stimulants were given. Six weeks after the misadventure he was returned to the hands of the Confederates. He had been able to walk about the ward for two weeks; the wound was doing well, giving promise of entire recovery (*loc. cit.*, p. 330).

The escape of cerebral tissue proves that the cranial base and the dura mater were broken through by the missile.

CASE 75. *Gunshot Wound of Left Eye with Fracture of Base of Skull; Recovery.*—Colonel James W. was wounded July 18, 1864; a conoidal ball entered the corner of his *left* eye, and emerged below his *right* ear. His right side became paralyzed, and his face grew distorted from contraction of the facial muscles. The left eye was entirely destroyed. He was mustered out on July 5, 1865, and pensioned, his disability being rated total and permanent (*loc. cit.*, p. 331).

The occurrence of hemiplegia on the right side shows that the left cerebral hemisphere was injured, and that the left orbital plate of os frontis was probably broken.

CASE 76. *Gunshot Fracture of both Orbits and Base of Skull; Recovery.*—Peter B., aged 30, was wounded July 2, 1863; a conoidal musket-ball entered at the upper margin of *right* zygoma, passed through the apex of the *right* orbit, and emerged about the centre of lower margin of the *left* orbit; treated in field and Philadelphia hospitals. Ordinary dressings were applied to the wound; cathartics, stimulants, and tonics were administered. On the 30th wound already healed, and stiffness of jaw only complained of. Right eye totally destroyed; vision of left eye good. On Nov. 3, he was transferred to the Veteran Reserve Corps. On Dec. 19, 1866, the Pension Examiner reports that the lens of right eye is opaque, that the lachrymal duct of left eye is obliterated, and that the visual power is much impaired (*loc. cit.*, p. 329).

CASE 77. *Gunshot Wound of Right Eye with Fracture of Base of Skull; Recovery.*—Darius A., wounded March 5, 1863; bridge of nose, right eye, and portion of temporal bone carried away by a conoidal ball; also wound of left thigh. Taken prisoner, exchanged, and treated at Annapolis and Camp Chase. Discharged from the service Oct. 23 (*loc. cit.*, p. 332).

CASE 78. *Gunshot Fracture involving Anterior and Middle Fossa of Cranium; Recovery.*—L. A., aged 21; wounded July 18, 1864; a conoidal ball entered above the *left* eye, and lodged under the *right* ear; field, Washington, and Philadelphia hospitals. Left eye destroyed. Discharged June 14, 1865, and pensioned (*loc. cit.*, p. 332).

In this case the missile destroyed the left eye, and passed diagonally backward, downward, and toward the right, fracturing the left frontal and right temporal bones at their bases.

CASE 79. *Gunshot Wound of Left Eye with Fracture of Anterior Cranial Fossa; Recovery.*—Joel A. received a gunshot wound, fracturing orbital plate, and destroying left eye, on May 3, 1863. Sight of right eye sympathetically impaired. Treated in Washington, Delaware, and New Jersey Hospitals. Discharged on Dec. 11, and pensioned (*loc. cit.*, p. 332).

CASE 80. *Gunshot Fracture of Left Orbit and Petrous Bone; Recovery.*—Isaac H. B., aged 21, was wounded May 16, 1863. Missile entered at external canthus of left eye, passed under the brain and emerged through internal ear, fracturing the same and the orbital plate of malar bone, destroying the eye and causing complete deafness of the ear. Treated in Memphis, St. Louis, and Madison hospitals. Discharged July 26, 1864, and pensioned (*loc. cit.*, p. 333).

CASE 81. *Gunshot Fracture of the Base of Cranium with Wound of Right Eye; Recovery.*—John B. was wounded Sept. 17, 1862. A conoidal ball entered the right ear, and emerged from the right eye, completely destroying the globe. Admitted to Satterlee Hospital Oct. 29. The lower eyelid became everted. Discharged Jan. 20, 1863, and pensioned (*loc. cit.*, p. 333).

CASE 82. *Gunshot Wound of Left Eye with Fracture of Anterior Cranial Fossa; Recovery.*—Charles B., aged 31, wounded July 1, 1863. Fracture of frontal bone over left eye by conoidal ball; eye destroyed; also wound of right arm; treated in Pennsylvania and New York hospitals. Discharged Jan. 31, 1865, and pensioned (*loc. cit.*, p. 333).

CASE 83. *Gunshot Wound of Left Eye with Fracture of Anterior Cranial Fossa; Recovery.*—Charles B., wounded Sept. 17, 1862. Fracture of frontal bone by gunshot. Destruction of left eye and partial deafness of left ear. Treated in Corps and Washington hospitals. Discharged from the service November 3, and pensioned (*loc. cit.*, p. 333).

CASE 84. *Gunshot Wound of Left Eye with Fracture of Anterior Cranial Fossa; Recovery.*—Philip B., wounded May 31, 1862, by gunshot. Fracture of frontal bone above left orbit; missile lodged, destroying sight. Treated in field and New York hospitals. Discharged from the service Oct 29 (*loc. cit.*, p. 333).

The last three cases resemble each other very closely. In each of them the left eye was destroyed, and the orbital plate of the os frontis fractured by a gunshot projectile.

CASE 85. *Gunshot Wound of Right Eye and Fracture of Cranial Base; Recovery.*—Charles B., aged 18. Gunshot injury of occipital and frontal bones; with destruction of right eye, received Dec. 18, 1864. Discharged from the service June 26, 1865, and pensioned (*loc. cit.*, p. 333).

CASE 86. *Gunshot Wound of Left Eye and Fracture of Anterior Cranial Fossa; Recovery.*—Thomas G. B., aged 21. A conoidal ball entered the frontal bone to the left of the median line, traversed the frontal sinus, and lodged in the nasal foramen. Left thigh also wounded two inches above knee. Aqueous humour of left eye ran out. Admitted to hospital Dec. 11, 1862. Discharged from the service May 18, 1863. He is not a pensioner, and therefore it is hoped that his recovery is so complete that he does not need assistance (*loc. cit.*, p. 333).

In all probability the left orbital plate of the frontal bone was also broken.

CASE 87. *Gunshot Wound of Left Eye and Fracture of the Base of Skull; Recovery.*—Perry C. C., aged 40, received Aug. 29, 1862, a gunshot wound fracturing the temporal and orbital bones, and destroying the left eye. Treated

in hospital at Alexandria. On Oct. 31, he was discharged from the service and pensioned (*loc. cit.*, p. 333).

CASE 88. *Gunshot Wound of Right Eye and Fracture involving Base of Skull; Recovery.*—James A. C., aged 44, wounded March 29, 1865. Temporal bone and bones of face fractured, and right eye destroyed; treated in field, Washington, and Philadelphia hospitals; vision of left eye impaired. On July 27, 1865, he was discharged from the service and pensioned (*loc. cit.*, p. 333).

CASE 89. *Gunshot Wound of Right Eye and Fracture of the Base of Skull; Recovery.*—Franklin C., aged 31, wounded March 21, 1865. Right temporal bone fractured, and right eye destroyed by a conoidal ball; treated in field, New Berne, New York, and Madison hospitals. Discharged from the service on May 26, 1865, and pensioned (*loc. cit.*, p. 333).

CASE 90. *Gunshot Wound of Left Eye and Fracture involving the Base of Skull; Recovery.*—Charles C., aged 20, wounded Sept. 19, 1864. Left temporal bone and upper jaw fractured; left eye destroyed; treated in field and Philadelphia hospitals; several pieces of upper jaw removed. Discharged from the service, June 2, 1865, and pensioned (*loc. cit.*, p. 333).

CASE 91. *Gunshot Fracture involving the Base of Skull; Recovery.*—James W. D., wounded June 22, 1863. The missile entered the left zygomatic process, passed slightly upward and backward across the base of the cranium, and emerged on the opposite side just above the right zygoma. The optic nerve of the right eye was carried away, and the eye itself forced forward. He lay insensible for three days; fragments of bone were thrown off; gangrene. Mustered out on July 30, 1864, and pensioned (*loc. cit.*, p. 335).

CASE 92. *Gunshot Wound of Right Eye and Fracture of the Base of Skull; Recovery.*—Oliver P. E., wounded Sept. 1, 1864. Frontal bone fractured and right eye destroyed by a conoidal ball. Treated in field, Chattanooga, and Nashville hospitals. Discharged from the service May 30, 1865, and pensioned (*loc. cit.*, p 335).

CASE 93. *Gunshot Fracture involving the Base of Skull, etc.; Recovery.*—Robert F., aged 22, wounded May 25, 1864. Frontal, temporal, and malar bones of right side fractured by a conoidal ball. Treated in field and Washington hospitals. Vision of right eye destroyed. Discharged Oct. 3, 1864, and pensioned (*loc. cit.*, p. 335).

CASE 94. *Gunshot Fracture involving the Base of Skull, etc.; Recovery.*—W. J. T. H., aged 20, wounded July 9, 1864. Fracture of right temporal bone and loss of right eye caused by a conoidal ball. Treated in Frederick, Baltimore, and Philadelphia hospitals. Discharged April 18, 1865, and pensioned (*loc. cit.*, p. 336).

The orbital plate of the frontal bone was doubtless fractured in this case, as it was in the following strictly analogous example:—

CASE 95. *Gunshot Fracture of the Base of Skull, etc., Recovery.*—Capt. H. V. H. (Confederate). Treated in the military hospitals at Baltimore. Left temporal and orbital bones fractured; sight of left eye destroyed. He recovered, and on June 9, 1865, was sent to the post prison at Fort McHenry (*loc. cit.*, p. 336).

CASE 96. *Gunshot Wound of Right Eye with Fracture of the Anterior Cranial Fossa; Recovery.*—Robert H., aged 22, wounded May 5, 1864. Fracture of the right frontal bone with depression, and destruction of the right eye caused by a conoidal ball. Treated in Washington and Pittsburgh hospitals. Discharged November 14, 1864, and pensioned (*loc. cit.*, p. 336).

CASE 97. *Gunshot Wound of Right Eye with Fracture of the Anterior Cranial Fossa; Recovery.*—Edwin H., aged 32, wounded July 23, 1864. Fracture of frontal bone, and loss of right eye. Treated in field and New York hospitals. Discharged from the service Jan. 12, 1865, and pensioned (*loc. cit.*, p. 336).

CASE 98. *Gunshot Wound of Left Eye with Fracture of the Anterior Cranial Fossa; Recovery.*—Isaac H. (Confederate), wounded and captured July 1, 1863. Frontal bone fractured and left eye destroyed. Treated in Gettysburg and Baltimore hospitals. Paroled Sept. 25, 1863 (*loc. cit.*, p. 336).

CASE 99. *Gunshot Fracture involving the Base of Skull, etc.; Recovery.*—Lieut. George W. H., aged 37, wounded Oct. 6, 1864. Fracture of orbital and temporal bones, and loss of left eye, caused by a conoidal ball. Treated in Jefferson City Hospital. Returned to duty Nov. 3, 1864; discharged from the service April 20, 1865, and pensioned (*loc. cit.*, p. 336).

CASE 100. *Gunshot Wound of Right Eye with extensive Fracture of the Base of Skull; Recovery.*—Thomas A. H., aged 16, wounded July 1, 1863. The missile entered just below the inner angle of *left* eye, passed transversely backward and somewhat upward through the *right* eye, destroying it, and emerged three-fourths of an inch in front of upper lobe of *right* ear. Intense tumefaction of right side of face followed. Lower eyelid everted. On August 7 the wounds had healed. On December 31, 1863, he was transferred to the Invalid Corps; he is not a pensioner (*loc. cit.*, p. 336).

In this case it is probable that the orbital plate of the frontal, the sphenoid, and the ethmoid bones were broken, as well as the temporal in front of right ear.

CASE 101. *Gunshot Wound of Right Eye and Fracture of Anterior Cranial Fossa; Recovery?*—T. S. J. (Confederate). Fracture of orbital process of frontal bone on right side, and spine of scapula; right eye involved. Treated in hospital at Richmond; no result recorded. It is, however, believed that he recovered (*loc. cit.*, p. 337).

CASE 102. *Gunshot Wound of Left Eye and Fracture of the Base of Skull; Recovery.*—John J., aged 19, wounded May 9, 1864. Left temporal bone fractured, and left eye destroyed. Treated in field, Louisville, Camp Dennison, and Columbus hospitals. Right eye impaired; vertigo. Discharged, June 2, 1865, and pensioned (*loc. cit.*, p. 337).

Whenever a gunshot projectile fractures one of the temporal bones and destroys one of the eyes in its course, it of necessity passes through the base of the cranium at some point or other, fracturing the same more or less extensively according to the special circumstances of the case.

CASE 103. *Gunshot Wound of Right Eye with Fracture of the Anterior Cranial Fossa; Recovery.*—Edwin R. J., aged 23, wounded Oct. 5, 1864. Fracture of outer edge of right supra-orbital ridge, with loss of eye, caused by a conoidal ball. Treated in field, Nashville, Jeffersonville, and Springfield hospitals. Fragments removed. Returned to duty, Feb. 28, 1865. Discharged May 13, 1865, and pensioned (*loc. cit.*, p. 337).

CASE 104. *Gunshot Wound of Left Eye with Fracture of the Anterior Cranial Fossa; Recovery.*—Patrick J., aged 25, wounded June 29, 1864. Fracture of frontal bone at left orbital ridge, with loss of left eye. Treated in field, Point Lookout, and Washington hospitals. Transferred to Veteran Reserve Corps, Feb. 25, 1865. Discharged from the service, June 28, 1865, and pensioned (*loc. cit.*, p. 337).

CASE 105. *Gunshot Wound of Right Eye with Fracture of the Anterior Cranial Fossa; Recovery.*—Elias W. K., aged 34, wounded June 15, 1864. Fracture of frontal bone and destruction of right eye. Treated in field, Nashville, and Louisville hospitals. Vision of left eye also impaired. Discharged from the service, December 28, 1864, and pensioned (*loc. cit.*, p. 337).

CASE 106. *Gunshot Wound of Left Eye with Fracture of the Anterior Cranial Fossa; Recovery.*—Michael K., wounded Dec. 13, 1862. Frontal bone fractured and left eye destroyed. Treated in field and Washington hospitals. Vision of right also very imperfect. Discharged from the service Feb. 5, 1863, and pensioned (*loc. cit.*, p. 337).

CASE 107. *Gunshot Wound of Right Eye and Fracture of the Base of Skull; Recovery.*—Oliver K., aged 19, wounded March 29, 1865. Malar and sphenoid bones fractured, and right eye destroyed. Treated in field, Washington, and Philadelphia hospitals. Discharged from the service, June 28, 1865, and pensioned (*loc. cit.*, p. 337).

CASE 108. *Gunshot Wound of Left Eye and Fracture of the Base of Skull; Recovery.*—Lieut. Moses W. L., aged 34, wounded March 1, 1865. Fracture of temporal bone, with loss of left eye. Treated in hospital at Washington. Discharged from the service, May 6, 1865, and pensioned (*loc. cit.*, p. 337).

CASE 109. *Gunshot Wound of Right Eye and Fracture of the Base of Skull; Recovery.*—Joseph L., aged 27, wounded July 1, 1862. Fracture of temporal bone with loss of right eye. Treated in hospital at Baltimore Discharged from the service November 16, 1862, and pensioned (*loc. cit.*, p. 337).

CASE 110. *Gunshot Wound of Right Eye with Fracture of the Anterior Cranial Fossa; Recovery.*—Lieut. James H. L., wounded Feb. 25, 1865. Fracture of frontal bone with loss of right eye. Treated in field and City Point hospitals. Discharged from the service August 26, 1865, and pensioned (*loc. cit.*, p. 337).

CASE 111. *Gunshot Wound of Left Eye, with Fracture of Anterior Cranial Fossa; Recovery.*—Thomas M., aged 25, wounded June 20, 1864. Fracture of frontal bone and loss of left eye. Treated in field, Nashville, Louisville, and Camp Dennison hospitals. Discharged from the service May 31, 1865, and pensioned (*loc. cit.*, p. 338).

CASE 112. *Gunshot Wound of Left Eye, with Fracture of Anterior Cranial Fossa; Recovery.*—George G. P., aged 32, wounded May 3, 1863. Fracture of frontal bone and loss of sight of left eye. Treated in field and Washington hospitals. Discharged Dec. 19, 1863, and pensioned (*loc. cit.*, p. 339).

CASE 113. *Gunshot Wound of Right Eye with Fracture of Anterior Cranial Fossa; Recovery.*—George R., wounded Sept. 17, 1862. Frontal bone fractured and right eye destroyed. Discharged from the service Nov. 15, 1862, and pensioned (*loc. cit.*, p. 339).

Whenever a cylindro-conoidal musket-ball penetrates or destroys the eyeball, and at the same time fractures the frontal bone, the anterior fossa of the basis cranii is, too, almost always involved in the breach, as happened in the last case and in several others which precede it.

CASE 114. *Gunshot Wound involving Right Eye and Base of Skull; Recovery.*—Sergt. Aquilla M., aged 23, wounded Sept. 20, 1863. Right temporal bone fractured, and sight of right eye destroyed. Treated in field, Chattanooga, Nashville, and Columbus hospitals. Discharged from the service July 11, 1864, and pensioned (*loc. cit.*, p. 338).

CASE 115. *Gunshot Wound involving Right Eye and Base of Skull; Recovery.*—John W. M., wounded Oct. 22, 1862. Fracture of frontal and temporal bones, with loss of right eye. Treated in hospital at Hilton Head. Hearing of right ear also impaired. Discharged from the service Dec. 14, 1862, and pensioned (*loc. cit.*, p. 338).

CASE 116. *Gunshot Wound involving Right Eye and Base of Skull; Recovery.*—Wm. H. M., aged 23, wounded Nov. 30, 1864. Frontal and temporal bones injured, and right eye destroyed. Treated in hospital at Hilton Head. Discharged May 9, 1865, and pensioned (*loc. cit.*, p. 338).

CASE 117. *Gunshot Wound of Left Eye, with Fracture of Base of Skull; Recovery.*—Sergt. Hugo M., wounded Sept. 14, 1862. The missile entered behind the left mastoid process of the temporal, and passing forward, emerged through the left orbit, carrying the left eye away. Discharged Nov. 27, 1862, and pensioned. Left side of face paralyzed. Great deformity. Cannot shut the right eye (*loc. cit.*, p. 339).

CASE 118. *Gunshot Wound of Right Eye and Fracture of Base of Skull; Recovery.*—Capt. David R., wounded Sept. 29, 1863. Right temporal bone fractured, and right eye destroyed. Treated in hospital at New Orleans. Returned to duty Nov. 6, 1863. Discharged from the service March 11, 1864, and pensioned (*loc. cit.*, p. 339).

CASE 119. *Gunshot Wound of Left Eye and Fracture of Base of Skull; Recovery.*—Sutton R. (coloured), aged 20, wounded June 17, 1864. Fracture of temporal bone, and destruction of left eye. Treated at Point Lookout. Returned to duty Nov. 14, 1864 (*loc. cit.*, p. 339).

CASE 120. *Gunshot Wound of Right Eye and Fracture of Base of Skull; Recovery.*—Christopher R., aged 35, wounded May 6, 1864. Fracture of temporal bone, with loss of right eye. Treated in field, Washington, and Detroit hospitals; headache, vertigo, and mental aberration. Discharged from the service Aug. 29, 1864, and pensioned (*loc. cit.*, p. 340).

CASE 121. *Gunshot Wound of Right Eye and Fracture of Base of Skull; Recovery.*—Lieut. Andrew B. R., aged 27, wounded July 16, 1864. Temporal and nasal bones fractured, and right eye destroyed. Treated in Chattanooga and Nashville hospitals. Senses of taste and smell nearly destroyed. Discharged May 15, 1865, and pensioned (*loc. cit.*, p. 340).

In this case the ethmoid bone was also broken, and this lesion was attended with almost complete obliteration of the olfactory sense.

CASE 122. *Gunshot Wound of Right Eye and Fracture of Base of Skull; Recovery.*—Daniel M. R., aged 21, wounded May 10, 1864. Frontal and nasal bones fractured, and right eye destroyed. Treated in field, Washington, and New York hospitals. Vision of left also imperfect. Returned to duty July 28, 1864. Discharged Dec. 22, 1864, and pensioned (*loc. cit.*, p. 340).

CASE 123. *Gunshot Wound of Left Eye, and Fracture involving Anterior Cranial Fossa; Recovery.*—Matthew S., aged 36, wounded April 6, 1865. Frontal bone fractured and left eye destroyed. Treated in field, City Point, and Washington hospitals. Discharged June 14, 1865, and pensioned (*loc. cit.*, p. 340).

CASE 124. *Gunshot Wound of Right Eye and Fracture involving Anterior Cranial Fossa; Recovery.*—Wm. H. S., wounded Sept. 13, 1864. Frontal bone fractured and right eye destroyed. Treated in Fort Monroe and New York hospitals. Discharged June 27, 1865 (*loc. cit.*, p. 340).

CASE 125. *Gunshot Wound of Right Eye and Fracture involving Anterior Cranial Fossa; Recovery.*—Lieut. George A. S., wounded June 18, 1864. Fracture of os frontalis, with loss of right eye; also fracture of right scapula, and flesh wounds of right arm and right hip. In hospital at Detroit. Discharged from the service Oct. 15, 1864 (*loc. cit.*, p. 340).

CASE 126. *Gunshot Wound of Right Eye, and Fracture involving Anterior Cranial Fossa; Recovery.*—Alden S. S., aged 26, wounded Sept. 19, 1864. Frontal bone fractured, and right eye destroyed; right leg also fractured. Field, Baltimore, Brattleboro, and Montpelier hospitals. Discharged June 12, 1865, and pensioned (*loc. cit.*, p. 341).

CASE 127. *Gunshot Fracture involving Orbit and Anterior Cranial Fossa; Recovery.*—John S., wounded Sept. 17, 1862. Gunshot fracture of superciliary ridge and frontal bone. Baltimore hospital. Vision of the right eye impaired, and vertigo. Discharged Nov. 26, 1862, and pensioned (*loc. cit.*, p. 341).

CASE 128. *Gunshot Wound of Right Eye; Anterior Cranial Fossa extensively Fractured; Recovery.*—Warren S., aged 21, wounded May 5, 1864. Frontal, orbital, and maxillary bones fractured, and right eye destroyed. Field, Washington, Chester, and New York hospitals. Discharged Sept. 5, 1864, and pensioned. Has constant pain in head, with frequent attacks of vertigo (*loc. cit.*, p. 341).

CASE 129. *Gunshot Wound of Left Eye, and Fracture involving Anterior Cranial Fossa; Recovery.*—Patrick S., aged 28, wounded May 12, 1864. Frontal bone fractured, and left eye destroyed. Had previously received wounds of abdomen and foot. Field, Washington, Readville, and Worcester hospitals. Discharged July 21, 1865, and pensioned (*loc. cit.*, p. 341).

CASE 130. *Gunshot Wound of Left Eye; Anterior Cranial Fossa Fractured; Recovery.*—Sergt. Isaac S., wounded July 3, 1863. Fracture of left supra-orbital arch, with loss of left eye. Seminary and York hospitals. Oct. 1, fragments of ball removed; Oct. 21, returned to duty. May 25, 1864, killed in battle near Dallas, Ga. (*loc. cit.*, p. 341).

CASE 131. *Gunshot Wound of Right Eye; Anterior Cranial Fossa Fractured; Recovery.*—Samuel G. T., frontal bone fractured and right eye destroyed. Louisville hospital. Returned to duty March 11, 1863. Discharged April 22, 1863, and pensioned (*loc. cit.*, p. 342).

CASE 132. *Gunshot Wound destroying both Eyes and fracturing the Base of the Skull; Recovery.*—John M., aged 42, wounded April 2, 1865, by a conoidal ball, which entered the anterior part of right temporal region, passed transversely across both orbits, and emerged at a corresponding point on the opposite side of head. Treated in hospital at Fort Monroe and Albany. Discharged from the service Nov. 30, 1865, and pensioned. He was totally blind, and the orbits were filled with profuse granulations of a flabby, spongy character. There was slight ectropion of both eyelids, the lashes resting against the contents of the sockets, giving rise to considerable irritation (*loc. cit.*, p. 327).

In this case the missile necessarily broke the orbital roofs which to a considerable extent form the flooring of the anterior cranial fossa.

CASE 133. *Gunshot Wound of Left Orbit and Anterior Cranial Fossa; Recovery.*—Jacob M., aged 25, was wounded Sept. 19, 1863, by a buckshot, which fractured and lodged in the frontal bone near the nasal eminence, causing fracture of left orbit and exophthalmos of left eye. Treated in Nashville, Louisville, and Indiana hospitals. On June 15, 1864, the missile was extracted. Expectant treatment only was used. The patient, recovering, was mustered out Sept. 17, 1864, and pensioned. On Aug. 17, 1868, the Pension Examiner reports the patient suffering from caries of the frontal bone, attended with purulent discharge, loss of power in left eye, general disturbance of the mental faculties, which are aggravated when the wound discharges much, and at times complete prostration. A subsequent report, dated Jan. 7, 1870, confirms previous statement of his condition, and states his disability as total and permanent (*loc. cit.*, p. 164).

In the above case the missile fractured the orbital plate of the os frontis, and probably some other parts of the anterior cranial fossa.

CASE 134. *Gunshot Wound involving the Base of Skull; Recovery.*—Henry A. B., wounded June 1, 1864, by a conoidal musket-ball, which fractured the temporal, malar, superior and inferior maxillary bones of right side. Treated in field, Alexandria, De Camp, and Dale hospitals. Discharged, May 9th, 1865. He is not a pensioner (*loc. cit.*, p. 166).

In this case the missile necessarily involved the basis of the cranium in its course.

CASE 135. *Gunshot Wound involving the Anterior Cranial Fossa; Recovery.*—Samuel P. I. was wounded August 14, 1864, by a conoidal ball, which entered at the outer edge of the left superciliary ridge of the frontal bone, passed backward and downward, involving in its course the lower surface of the left anterior lobe of the cerebrum and the left orbital plate. Treated in field hospital, and furloughed. On January 27, 1865, he was discharged from the service and pensioned. On June 21, 1866, the Pension Examiner reports a small depression at wound of entrance from loss of bone; patient slightly affected in mind, and guilty of irregularities both mental and moral; disability rated at one-fourth and permanent (*loc. cit.*, p. 191).

It is probable that some additional cases belonging to the same category as the foregoing might be gleaned by making a more vigorous search of the remarkable collection of cases wherein they were found: but enough have been presented to show abundantly (1) that recovery took place in a very large proportion of all the cases of gunshot fracture involving the base of the skull whereof abstracts are published in the *Medical and Surgical History of the War of the Rebellion;* and (2) that fractures in general which involve the base of the skull prove mortal much less frequently than heretofore has generally been supposed.

Of the one hundred and thirty-seven cases related or referred to in the foregoing pages of this article, thirty-five appear to have recovered so fully as to go back to duty permanently or to enter the Veteran Reserve Corps on the one hand, or to be mustered out of, or discharged from, the service without pension on the other. At least one of those returned to duty was afterwards killed in battle. Two or three recovered so completely as to re-enlist. Most of them, however, were discharged from the service and pensioned, their disabilities ranging from one-fourth all the way up to total. Some of these died a long time afterward of diseases having no connection with the cranial lesion. But, many of these cases show that disability resulting from cerebral lesions may increase with the lapse of time. This circumstance is of practical importance to Pension Examiners, and to all surgeons who have to deal with this class of injuries.

In about one-half of the cases related above, the breach occurred in bones which lie beneath the anterior cerebral lobes, *i. e.* in the anterior cranial fossa, and hence it is inferred that fractures involving the anterior cranial fossa are much less fatal than fractures involving the other parts of the cranial base.

Among the practical lessons to be drawn from the foregoing cases are the following: 1. Fractures involving the base of the skull are not of necessity mortal; on the contrary, a considerable proportion of them recover. 2. Those patients will do best who are kept at *rest* and treated *antiphlogistically*, *i. e.* with meagre diet, cold to head, purgatives, mercurials, blisters, etc., *pro re nata*, during the inflammatory and suppurative period after the mishap. Several apparently desperate cases were saved in this way; and for want of such treatment many recovered but imperfectly, or did even worse than that. 3. Ligation of the common carotid artery may be successfully employed for the arrest of hemorrhage from the middle meningeal artery. Two cases were successfully treated on this plan. 4. A considerable number of patients suffering from gunshot fracture of the cranial base, especially such as have been imperfectly, inadequately, or neglectfully treated, will, after appearing to improve for some considerable time, begin to deteriorate, and acquire atrophy and contraction of tendons in paralyzed limbs, more headache and vertigo, increased blindness and deafness, traumatic epilepsy, impairment of the mental faculties, etc. Many cases related above illustrate the truth of this sad statement. The great practical lesson to be drawn therefrom is that in all cases where this lesion is present, the possibility of so unfortunate a result should steadily be kept in view, and the treatment should be carried out with corresponding thoroughness as long as needed. Above all, quiet surroundings with *rest* of body and mind, and enforcement of the antiphlogistic regimen should be secured for the patient thoughout the inflammatory period.

Thus, it is shown that the experience garnered by the industry of our military and pension surgeons during and since the late civil war has added much information of a practical character to our knowledge of this important subject; and the writer feels that he has done a meritorious work in collecting and presenting it to the readers of this Journal.

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## ARTICLE IV.

### NATURE OF THE ACTION OF BELLADONNA ON THE SYSTEM.

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THE remarkable character of the action of belladonna on the system and its poisonous quality when taken in an overdose are claims for the attentive study of its *modus operandi* which therapeutists, pathologists, and medical jurists alike recognize. And yet, if the facts stated and the explanations of them propounded in this article be correct, it will appear that the hitherto received doctrine on the subject is, for the most part, fundamentally erroneous.

In cases of belladonna poisoning which have terminated fatally, venous congestion of the brain and spinal cord with serous effusion has been found on *post-mortem* examination. To this state the derangement of the cerebral and muscular functions which forms so prominent a symptom of the poisoning during life is, no doubt, owing. The flushing of the skin and blood-shot state of the conjunctiva in simple atropism are external manifestations of venous congestion likewise.

Now the question arises, What is the nature of the action whereby belladonna causes this disturbance of the circulation in the extreme vessels?

Preliminary to attempting an answer to this, however, we have to inquire into the more general question respecting the nature of the conditions on which venous congestion otherwise fundamentally depends.

It is a matter of common remark, I believe, that in a part where venous radicles are found congested with blood, there a constricted state of the small arteries leading to them is to be observed. In respect to this, let it be particularly noted that the blood with which the venous radicles are, in such cases, gorged, has not been driven into them by the contraction of the arteries nor by any increased exertion of the heart's force. The distension of the veins is owing to accumulation of blood, permitted by the retardation of its flow in those vessels occasioned by the resistance offered to the free circulation through the constricted arteries of the part.

The spasmodic constriction of the small arteries which takes place at

the moment of death, it is to be further noted, does not drive the blood onwards through the capillaries into the veins, but, there being no longer any *vis a tergo* from the now pulseless heart, the constriction of the small arteries causes regurgitation of the blood contained in them towards their trunks.

The fact, which I have elsewhere so often insisted on, that dissipation of a state of congestion in the frog's web follows the relaxation of the walls with dilatation of the calibre of the small arteries which is induced as a secondary effect of the application of a drop of some irritating liquid to the part may be taken, conversely, as a proof that constriction of the small arteries is the condition on which the congestion depended.

To recur now to the *modus operandi* of belladonna in causing venous congestion: In the web of a frog under the microscope we observe that, after the application of a drop of a strong solution of the sulphate of atropia, constriction of the small arteries takes place owing to contraction of their muscular coat, as is evidenced by the increase in thickness of their walls. The effect of this constriction of the calibre of the small arteries on the flow of blood in the part, we see, is to retard it so that venous congestion results.

We sometimes also find that atropia dropped into the eye excites great vascular congestion of the conjunctiva.

From this we may fairly conclude that the concatenation of the phenomena in belladonna poisoning stands thus: 1st. Constriction of the small arteries induced by the special action which belladonna exerts on the muscular coat of those vessels stimulating it to contract. 2d. The establishment of venous congestion in the brain and spinal cord, for example as the effect of the obstruction of the flow of blood in the constricted arteries. 3d. The cerebral and muscular disturbance arising from the venous congestion in the brain and spinal cord.

Constriction of the calibre of an artery caused by contraction of the muscular coat, excited by atropia, corresponds fundamentally with the dilatation of the pupil caused by contraction of the radiating muscular fibres of the iris, which the atropia solution dropped into the eye excites. This brings me to inquire into the particular mechanism of the action of atropia on the pupil: And first it is to be noted that in addition to the muscular contractility of the circular fibres composing the sphincter pupillæ and of its radiating fibres composing the dilator pupillæ, the iris possesses the property of elasticity. Now unless this double endowment of the iris—*vital contractility* and *physical elasticity*—be taken into due consideration, no correct analysis of the phenomena of the motions of the pupil can be made.

In birds, in which the sphincter pupillæ muscle is very much developed (its fibres, it may be observed, are of the transversely striped variety) and in which there is no true dilator pupillæ muscle, the elasticity of the iris

causes the pupil to become widely dilated on the cessation of the action of the circular muscular fibres forming the sphincter, as may be seen in a dead bird's eye; but *such is not the case in the human eye.* Here the pupil is always found, when examined *some time after death*, of medium width—neither much contracted nor much dilated. The operation of the elasticity of the iris is such that it brings the pupil back to this medium width, whatever the state of that aperture may have been at the moment of death. We can demonstrate the operation of the elasticity of the iris by the following experiment.[1] In a *post-mortem* examination, detach the anterior segment of the eyeball by abscission, place it in a saucerful of water and remove the lens. If now we introduce a closed forceps into the pupil and allow the blades to separate so as to stretch wide the aperture, we find on withdrawing the instrument that the pupil comes back to its previous width by means of the elastic reaction. If, on the other hand, we stretch the iris towards the centre of the pupil, as it were to contract the aperture, the elasticity of the iris again will bring back the pupil to its previous width on the remission of the stretching force.

The physical elasticity of the iris thus operates as an intervening power between the vital contractions of the sphincter and dilator muscles of the pupil, so that they are not in a constant struggle with each other, like two wrestlers, as is commonly supposed. In proof of this, may be adduced, the fact that where the sphincter pupillæ is paralyzed, as it is, in common with the levator palpebræ superioris, rectus internus, rectus superior, rectus inferior, and obliquus inferior muscles, in cases of paralysis of the third nerve, the pupil is not dragged into a state of full dilatation by unrestrained action of the dilator pupillæ. This muscle is itself restrained by the elasticity of the iris, and in order that the pupil may, in such a case, be brought to a state of full dilatation it is necessary to drop the solution of atropia into the eye, in order to excite to contraction the dilator pupillæ.

This fact shows how erroneous the common opinion is that atropia causes dilatation of the pupil by paralyzing the sphincter muscle and giving scope to unrestrained action of the dilator; while it incontrovertibly proves that atropia operates, as I have long maintained, by directly exciting to contraction the radiating muscular fibres composing the dilator pupillæ. This is, indeed, so self-evident that it is amazing to me to find physiologists and therapeutists to have gone on so long repeating the old story as to the paralyzing action of belladonna.

Atropia applied to the web of a frog causes constriction of the small arteries by exciting to contraction their muscular coat in about the same time that it takes to produce dilatation of the pupil, when dropped into the eye, by exciting to contraction the radiating muscular fibres of the iris—say from ten to twenty minutes.

[1] See a paper of mine "On the Motions of the Pupil," Edinburgh Medical and Surgical Journal, 1833.

It is a phenomenon of ready observation that when the atropia has as yet acted only incompletely, the pupil will rapidly become more dilated if we cover the eye, but will contract again on exposure to the light. This contraction, however, is only to the degree of width in which the pupil was when the atropia had as yet acted partially. In a short time longer —say ten to twenty minutes in all, after the atropia was first dropped into the eye, the pupil is found fully dilated and cannot now be excited to contraction by exposure to the light.

In like manner, I have seen an artery of the frog's web, when as yet only partially constricted by the action of atropia on its muscular coat, become rapidly more constricted in consequence of the further contraction of its muscular coat, excited by some ordinary stimulus, such as mechanical irritation of the web; but this further contraction I have found quickly to subside, and the calibre of the artery return to the smaller degree of constriction to which it had been brought by the incomplete action of the atropia on its muscular coat. By and by, however, after the time required for the complete action of the atropia on the artery, I have found the calibre of the vessel to have become constricted more fully and persistently.

Besides the well-known dryness of the throat, pallor of the skin preceding the flushing has been found to occur as an early symptom of atropism. This, no doubt, is an effect of the constriction of the small arteries before there has been time for the accumulation of blood in the venous radicles, which supervenes as a consequence of the arterial constriction, and which causes the flushing.

Though belladonna is thus not a paralyzing agent fundamentally, but is, in fact, a stimulant of organic muscular action, the congestion of the brain and spinal cord induced by it, operates secondarily, with a general kind of paralyzing effect.

Whilst atropia causes dilatation of the pupil, by exciting to contraction the dilator pupillæ muscle, Calabar bean, or its principle esserine, causes contraction of the pupil, by exciting to action the sphincter pupillæ muscle. To this I may add, that I have found Calabar bean to exert a constricting action on venous radicles, by exciting contraction of their muscular coat.[1]

Atropia and Calabar bean, though thus so far antagonistic to each other, cannot be viewed as exactly antidotal. A real antidote to belladonna should be, for example, an agent causing relaxation of the walls of the small arteries, whereby their calibre is permitted to yield to dilatation by the stream of blood, so that the free circulation is re-established. It is in some such manner that diffusible stimulants hitherto employed in belladonna poisoning seem to act.

[1] Calabar bean exerts no special action on the muscular coat of the arteries. Like any ordinary irritant of the web of a frog, I have seen it excite, on the first application, a slight constriction of their calibre which, however, quickly subsided.

In conclusion, it may be interesting to remark on the consentaneousness of the contraction of the muscular coat of the arteries, and of the radiating muscular fibres of the iris. Both are under the control of the sympathetic nerve,—both are stimulated to action by belladonna, and both become spasmodically contracted at the moment of death. The pallor of death, as before said, is owing to constriction of the small arteries (occasioned by contraction of their muscular coat) by which the blood is regurgitated into the arterial trunks—not driven onward into the veins. As to the pupil at the moment of death: A patient suddenly fell back dead, while Sir William Jenner was looking him in the face. At this very moment, Sir William told me that he observed the pupil to become widely dilated. This dilatation, as before said, was owing to the spasmodic contraction of the radiating muscular fibres of the iris. On the subsidence of the rigor mortis of these fibres, however, the physical elasticity of the iris brings the pupil into the middle degree of width—this being the state, as before observed, in which the dilator muscle and sphincter muscle are both relaxed.

After the subsidence of *rigor mortis*, in the case of the small arteries, a part admits of being more finely injected. Though relaxed, the arteries may not dilate of themselves without distension with an injected fluid, there being no marked elastic dilating agent in their structure, such as we find in the walls of the larger arteries.

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## ARTICLE V.

### AN ACCOUNT OF TWO CASES OF PELVIC ANEURISM.[1] By HENRY B. SANDS, M.D., Professor of the Practice of Surgery in the College of Physicians and Surgeons, New York.

CASE I. *Gluteal Aneurism, treated by Digital Compression, with the hand in the rectum, and by Compression of the Aorta with Lister's Tourniquet; no Result.*—Edwin C., a spare but healthy looking man, twenty-eight years old, entered the Roosevelt Hospital, under my care, on Dec. 6, 1879, and gave the following history: He had been a clerk by occupation; had always been temperate, and had never contracted syphilis. Twelve years before admission he fell from a wagon, striking on the buttock. He could not remember which side was injured, but thought that the injury must have been slight, as it did not cause lameness or pain after the lapse of the first few days. Six years ago he had an attack of "sciatica" in the right thigh and leg, and ever since that time he had been subject to occasional pain in the same limb, the pain being, perhaps, most marked in the situation now occupied by the tumour. Fifteen months ago a small, prominent swelling was discovered in the right gluteal region; and, three months ago, the disease being recognized as aneurismal, the patient

[1] Read before the New York Surgical Society, Feb. 22, 1881.

was kept in bed, and treated by moderate digital compression of the abdominal aorta, and by the internal administration of the iodide of potassium, in doses of fifteen grains, three times a day, combined with infusion of digitalis. No benefit resulting, he was recommended by his attending physician, Dr. N. W. Leighton, of Brooklyn, to apply to me for hospital treatment. On examination, I found a deep-seated, extensive, and moderately prominent swelling, situated on the right side of the buttock, and presenting all the features of an aneurism. It was ovoid in shape, its lower margin corresponding with "Nélaton's line," while its upper limit reached a point one inch above the highest part of the iliac crest. The long axis of the tumour was directed obliquely downward and inward. A line drawn from the anterior superior spinous process of the ilium to the posterior median line of the sacrum, $8\frac{1}{4}$ inches above the anus, measured $13\frac{3}{4}$ inches; a line extended between the corresponding points on the left side measured $11\frac{1}{4}$ inches. The tumour was moderately firm, apparently because the gluteal muscles were in a state of tension; compression, however, greatly reduced its size, which was regained quite rapidly when the pressure was removed. Expansile pulsation, and a well-marked systolic murmur, were detected over the entire surface of the swelling, the murmur being most intense near its upper and its lower part. Both pulsation and murmur ceased when firm pressure was made on the abdominal aorta, or on the right common iliac artery through the abdominal wall. Pulsation in the femoral and tibial arteries was alike on both sides. No disease could be discovered affecting the heart or kidneys.

A careful consideration of the facts above stated led me to regard the case as one of gluteal aneurism. No other disease would account for the symptoms present, except a malignant, pulsating tumour of the pelvis; and this seemed to be excluded by the slow growth of the tumour, the absence of cachexia, enlarged glands, secondary tumours, or of bony tissue at the margin of the swelling. Aware, however, of the difficulty often encountered in distinguishing between these two diseases, and of the unavoidable mistakes in practice which had been made by experienced surgeons, I determined to resort to manual exploration of the rectum, with the object of throwing light upon the nature of the disease, and of attempting to cure it in the event of its proving to be aneurismal.

Accordingly, on Dec. 13th, the patient having been etherized, and an elastic bandage applied so as to compress the femoral artery in Scarpa's space, I introduced my right hand into the rectum, and noted the following facts: The lower part of the abdominal aorta, the right common and external iliac arteries, seemed normal. The right internal iliac artery, on the contrary, was found to be tortuous, and dilated to nearly twice its natural size, from its origin to a point about an inch internal to the sciatic notch, where it merged into a compressible, pulsating swelling, nearly an inch in diameter, which appeared to be an internal prolongation of the gluteal tumour.

The examination thus confirmed the diagnosis of aneurism, and at the same time demonstrated that, in this particular case, either of the two operations usually recommended for the cure of gluteal aneurism would be dangerous and ineffectual. The question had been raised, whether the

disease was of traumatic origin; and if, acting upon this supposition, the operator were to lay open the sac, he would find the afferent artery beyond his reach, and encounter uncontrollable hemorrhage. Likewise, if the alternative of tying the internal iliac were adopted, the diseased condition of the artery would doubtless prevent success. Manual exploration of the rectum is therefore shown to be a most valuable resource in cases of gluteal aneurism, and should always be practised before resorting to the use of the knife.

Apart from these considerations, however, I had already decided to try another expedient, the idea having suggested itself to me, that cases of pelvic aneurism might properly be treated by digital pressure, exerted through the wall of the rectum. By this means I thought that the artery could be readily controlled without interfering with the accompanying vein, and without the risk which is incurred, when a tourniquet is applied, of damaging the small intestine or the peritoneum.

Accordingly, after completing the examination, I immediately reintroduced the hand, and compressed the upper part of the common iliac artery against the spinal column, placing the middle finger directly over the artery, and the index and ring fingers on either side of the vessel, to prevent it from slipping. Very moderate pressure sufficed to stop the flow of blood through the artery, and only occasionally was it found necessary to reinforce the pressure made by the hand in the rectum by that of an assistant, placed upon the anterior abdominal wall. The hand was removed from the rectum at the end of an hour and a half, when the tumour, which, during this period, ceased to pulsate, was observed to be tolerably firm, and to yield only a feeble pulsation and murmur. Unfortunately, the hopes which were excited by the immediate result of the procedure were not fulfilled, and a few days afterward the aneurism regained its former state. No unpleasant symptoms having followed the operation, I repeated it for the same length of time eight days later, on Dec. 21. On this occasion the fingers were several times shifted to different parts of the artery with the view of diminishing the risk of injuring the coats of the rectum. During these changes of position the circulation was commanded by an assistant, who compressed the aorta against the spine. Partial and temporary consolidation again followed this second attempt, and after an unsatisfactory trial of a horseshoe tourniquet applied over the common iliac artery, I subjected it for a third time, on Jan. 4, to digital pressure made by the hand in the rectum. Pressure was maintained for a period of three hours and fifteen minutes, when the hand became numb and weak, and had to be removed. The result was the same as in the former attempts.

On Jan. 10, instrumental pressure was begun, and during the following three months it was applied about twenty-five times, being made during the first month by a horseshoe tourniquet placed over the common iliac artery, and subsequently by a Lister's tourniquet over the aorta. Usually the instrument was kept on for about three hours, and did not entirely control the circulation. Once, ether was administered, and the aorta was thoroughly compressed for six hours; this caused great weakness of the pulse, and was followed by slight peritonitis. All treatment having proved ineffectual, the patient, who declined to incur the risk of having a

ligature applied to the common iliac, left the hospital on April 14, in the same condition as when he entered it.

The case is instructive, notwithstanding the negative result of treatment. It illustrates, in a striking manner, the value of manual exploration of the rectum in cases of suspected aneurism in the region of the pelvis, and demonstrates the practicability and safety of maintaining, for several consecutive hours, pressure on the great arteries by the fingers placed against the rectal wall. No inconvenience resulted from the procedure, except slight soreness of the rectum, and incontinence of flatus, both lasting only a few days; while the ease and certainty with which the object was accomplished, contrasted remarkably with the difficulty experienced in adjusting the pad of the tourniquet, and in shutting off the flow of blood by this instrument without a dangerous amount of pressure. I anticipate, therefore, success in the employment of this method, notwithstanding its failure in this particular case.

CASE II. *Aneurism of the External Iliac Artery; Ligation of the Common Iliac Artery, with subsequent Amputation of the Thigh; Recovery.*—John G. C., a clerk, 33 years old, came under my care in the New York Hospital on Oct. 9th, 1880, on account of a large pulsating tumour situated in the left iliac fossa. It was ascertained that his grandfather had died of "cancer," seated upon the thigh, and that his aunt had been treated for what was said to be a malignant growth, occupying the left eyelid. The patient was a spare, anæmic, feeble-looking man, who confessed to having led an intemperate life during the past twelve years, and to having had, nine years ago, an attack of syphilis, followed by sore throat, alopecia, and iritis. He stated that three months before admission he was attacked with a severe pain, confined at first to the left knee, but soon extending upward to the groin; and that, at the same time, a swelling, occupying the site of the present tumour, was discovered by his attending physician. Six weeks later, pulsation was detected; and subsequently, the swelling gradually increased, and became more painful up to the time when he entered the hospital. On examining the tumour referred to, I found it to be oblong, its long axis being parallel with Poupart's ligament. Superficially, it was bounded on the inner side by a vertical line extended upward from the external abdominal ring; on the outer side by a vertical line touching the crest of the ilium, two inches behind the anterior superior spinous process; below by a curved line with its greatest convexity three-quarters of an inch below Poupart's ligament; and above by a similar line, having its greatest convexity midway between Poupart's ligament and the umbilicus. The tumour was exceedingly sensitive, but, although tolerably firm, it diminished considerably in size under steady pressure, speedily regaining its size when the pressure was removed. Pulsation was marked and expansile, and a well-marked systolic murmur was audible over its surface, being most intense over the normal line of the external iliac artery—this vessel being, however, as was afterwards discovered, deflected inward far beyond its usual position. Pulsation of the left anterior tibial artery was detected, but that of the femoral, popliteal, and posterior tibial was absent. Pain in the left thigh and groin was severe and constant, and the patient's general condition was unfavourable, the temperature being from 101 to 103, and the appetite and digestion poor.

In consequence of the fact that the chief bulk of the tumour, so far as it could be felt through the anterior abdominal wall, lay external to the course of the iliac arteries, I felt doubtful whether the disease was aneurismal or malignant. I therefore determined to explore the rectum, and on Oct. 13th, having administered ether, and placed the patient on his back at the foot of the bed, I carefully inserted my left hand, when I readily ascertained that the tumour was of greater extent than the external examination had led me to suppose. It dipped into the cavity of the pelvis, overlapped somewhat the left common and internal iliac arteries, and carried before it, upon its inner surface, the external iliac artery, pressure on which completely arrested the pulsation of the tumour, which was unaffected when pressure was made on the internal, instead of the external, iliac. The latter circumstance seemed to favour the diagnosis of aneurism; for experience has shown that pulsating malignant growths, developed from the pelvic bones, are usually supplied with numerous arteries derived from several sources, and that in them pulsation is not always arrested by the compression of a single trunk. Pressure on the common iliac, like that on the external iliac, stopped both pulsation and murmur, but pressure on the internal iliac left these symptoms unaltered.

After completing the examination, I made pressure on the external iliac artery for forty minutes, being unable to continue the procedure for a longer period, on account of the unfavourable direction of the pressure, which had to be made outwardly, against the somewhat yielding substance of the tumour. Nothing was accomplished by the pressure, and the tumour, which had, about forty-eight hours previously, become rapidly larger, continued to increase after the rectal examination; so that, on Oct. 16th, it was found to overlap the crest of the ilium, and to reach within an inch of the umbilicus. Meanwhile the patient grew weaker and more restless, and was nearly deprived of sleep by pain.

Danger to life being imminent, and the case being evidently hopeless if left without surgical interference, I endeavoured to decide what plan of operation would best meet the existing emergency. So far as could be determined, the disease appeared to be aneurismal; yet the possibility of the tumour being a pulsating sarcoma, with extensive extravasation, could not be denied. This doubt alone would have made me hesitate before attempting the operation of laying open the tumour by incision; while, in any case, I feared that so severe a measure would prove disastrous, in consequence of the patient's enfeebled condition. The alternative of tying the external or the common iliac artery according to any of the usual methods was, after careful consideration, rejected as impracticable, on account of the size and situation of the tumour, which rendered it impossible to expose these vessels by lateral incisions through the abdominal wall, not involving the peritoneum. Finally, the information I had obtained while making manual exploration of the rectum suggested to me the only plan which seemed expedient under the circumstances. This examination had revealed the fact, that the external iliac artery had been carried by the growing tumour a little to the right of the median line of the body, and that pressure on the artery, as it lay strapped on the inner surface of the tumour, completely stopped its pulsation. I therefore thought

that an incision in the linea alba down to the peritoneum might enable me to separate that membrane, without wounding it, sufficiently to expose the artery where it coursed over the tumour, and where it might, perhaps, be conveniently tied. Failing in this attempt, I could, by opening the peritoneum, obtain ready access to the pelvic vessels, and apply a ligature at whatever point seemed most favourable.

The plan thus sketched having received the approbation of my colleagues, I performed the following operation on October 17th. Ether having been administered, I made an incision in the median line, from the umbilicus to the symphysis pubis. The peritoneum, when reached, was readily stripped from the abdominal wall, and to some extent from the tumour, to which, however, it was so adherent, that I thought it best to make a free opening into the abdominal cavity. When this had been done, it was found that ligation of the external iliac artery would be impracticable. The lower part of this vessel was unhealthy in appearance, and was deeply imbedded in the tumour, while the upper part was so covered by, and blended with it, as to be altogether inaccessible. I therefore applied a ligature to the common iliac artery, about an inch above its point of bifurcation. This was accomplished with difficulty, the artery being concealed by the tumour, and adherent to it, and to the ureter, which was much enlarged, and was at first mistaken for an artery. The common iliac vein was not seen, but was carefully avoided when passing the aneurism needle, which had to be guided by the finger rather than by the eye. The ligature used was a piece of stout carbolized catgut—E violin string—and was tightened with sufficient force to divide the internal and middle coats of the artery. Both ends of the ligature were cut off about half an inch from the knot, the intestines were replaced, and a rubber drainage tube was inserted to the bottom of the wound, which was closed with interrupted silver sutures, embracing the peritoneum. In performing the operation, all the details of Lister's method were observed, except the employment of carbolized silk sutures, for which silver wire was substituted. After it was finished, the patient was placed on a water-bed, and the limb enveloped in cotton wadding. Rather unexpectedly, he rallied well from the operation, and his general condition improved steadily for some time afterward. The deep parts of the wound united by adhesion, while superficially, corresponding with the lower half of the incision, the integument failed to unite, and its retraction left an oval ulcer that healed very slowly by granulation. The drainage-tube was shortened on the eleventh, and removed on the fourteenth day. The abdominal wound was completely closed on December 9th; but on Jan. 1st the cicatrix softened, causing a sluggish ulcer which lasted five weeks, at the end of which time firm closure was obtained. Meanwhile, the patient became much reduced, in consequence of gangrene of the left foot and leg, which commenced a few days after the operation. The gangrene was quite dry, and involved the entire thickness of the limb as high as a line three inches above the ankle, beyond which there occurred at a later period, mortification of a narrow strip of integument, apparently due to pressure on the fibula, the leg having rested for many weeks upon its outer side. In consequence of the existence of a bedsore, diarrhœa, vomiting, and other signs of debility, no favourable opportunity for amputation occurred until Jan. 14th, when I removed the limb just above the knee, employing the circular method of operation, and, to avoid slough-

ing, separating the integument to an extent not exceeding half an inch. By cutting and detaching the muscles, the bone was exposed for section at a high point, and an excellent stump was left, which was firmly cicatrized three weeks after the amputation. This operation, like the first one, was performed according to Lister's antiseptic method, to which I am disposed to attribute, in a large measure, the remarkably good behaviour of the wounds, notwithstanding the low vitality of the patient.

After the operation of tying the iliac artery, the pelvic tumour became firmer, and steadily diminished in volume, becoming, after the lapse of three months, reduced to a small, hard mass, that barely filled the iliac fossa, and caused no projection of the abdominal wall. There can now be no doubt that the tumour was an aneurism, and that the cure effected is radical and complete. The patient's general health improved rapidly after the last operation, and the deep, as well as the superficial part of the wound, united almost entirely by primary adhesion.

Wishing to avoid the recital of details that might be wearisome, I have omitted many facts which are stated in the hospital records. An inspection of these records will show that, although the operation-wounds did well, the patient's general condition was often such as to excite serious apprehension that he would die from exhaustion; and I am quite certain that his recovery could not have been secured without the vigilant and skilful care bestowed upon him, during his protracted illness, by the gentlemen of the house-staff, aided by the excellent nurses of the hospital-training school.

In reviewing the case, which thus terminated favourably under most unpromising circumstances, I see no reason to regret the course of treatment pursued. Gangrene might, perhaps, have been avoided by ligating the external, instead of the common iliac artery, but the reasons why this was deemed inexpedient have been already stated, and appear to me conclusive. It is noteworthy, that the mortification was of the dry variety, the doomed parts dying very slowly, and becoming mummified as in cases of senile gangrene. This fact would seem to imply the absence of any interference with the venous circulation of the limb, either from the aneurism or the operation. Doubtless, the ligature of the artery in one way favoured the return of venous blood, by relieving the veins of the pressure of the aneurism, a marked subsidence of which, as well as diminished tension, was noticed immediately after the operation.

In this case, as in the one first related, manual exploration of the rectum afforded important information that could not be otherwise obtained. It threw light on the diagnosis, pointed out the vessel from which the tumour was developed, and demonstrated that the relations of the iliac arteries to the aneurism were such as, even apart from its unusual dimensions, would render futile an attempt to reach these arteries by the ordinary methods of operation. Even with the advantages of a median incision, and with a free division of the peritoneum, I found it very difficult to safely surround the vessel with a ligature, and some rough handling of the intestines was

unavoidable. The case affords another illustration of the impunity with which the peritoneum may be opened, and suggests the inquiry whether, in any case presenting unusual difficulties in the operation of tying the iliac arteries by the customary method, the one here adopted might not deserve the preference. I have witnessed fatal cases, in which I thought that death resulted from extensive separation of the peritoneum, combined with the stretching and bruising of the tissues found necessary to expose the artery; and I believe that such cases would have a better chance of success if the artery were directly exposed by a careful division of the peritoneum in the median line. The dangers attending such a procedure must, I think, be greatly lessened by the employment of an antiseptic animal ligature; and the case which I have narrated proves that catgut, if properly selected and prepared, is capable of permanently arresting the circulation through the largest artery which is likely to require ligation.

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## ARTICLE VI.

### WHAT IS THE EXPLANATION OF THE PROTECTION FROM SUBSEQUENT ATTACKS, RESULTING FROM AN ATTACK OF CERTAIN DISEASES, AND OF THE PROTECTIVE INFLUENCE OF VACCINATION AGAINST SMALLPOX?

By GEORGE M. STERNBERG, M.D., Surgeon U. S. A.

IN a majority, if not in all, of those diseases in which one attack is protective, we have an increase of the specific poison within the bodies of the sick, as is proved by the fact that the disease is communicated by them. The hypothesis which is, perhaps, most in favour with medical writers of the present day to account for the protection furnished by a single attack of these contagious maladies, is that which assumes that some material present in the blood or tissues of unprotected individuals is exhausted during the attack, and that when again exposed to the poison, the individual is no longer susceptible to its influence, as the pabulum necessary for its increase is no longer present in his system.

This hypothesis is sustained by Pasteur (*Sur le Choléra des Poules, Comptes Rendus Acad. des Sc.*, xc. pp. 952–958) to account for the protection afforded by inoculation with "attenuated virus"—compared to vaccination—which fowls enjoy from the disease known as chicken cholera. As the arguments used by Pasteur, based upon carefully conducted experiments, are probably the strongest that could be adduced in favour of the hypothesis referred to, I shall give them in detail, and will afterwards state my reasons for venturing to differ from this distinguished savant, and the facts which induce me to give preference to a different explanation of the phenomenon in question. The following are the conclusions of Pasteur:—

"It is the life of a parasite in the interior of the body which produces the malady commonly called '*choléra des poules*,' and which causes death. From the moment when this culture [*i. e.*, the multiplication of the parasite] is no longer possible in the fowl, the sickness cannot appear. The fowls are then in the constitutional state of fowls not subject to be attacked by the disease. These last are as if vaccinated from birth for this malady, because the fœtal evolution has not introduced into their bodies the material necessary to support the life of the microbe; or these nutritive materials have disappeared at an early age.

"Certainly we should not be surprised that there may be constitutions sometimes susceptible and sometimes rebellious to inoculation—that is to say, to the cultivation of a certain virus, when, as I have announced in my first note (*l. c.* pp. 239–248), one sees a preparation of beer-yeast made exactly like one from the muscles of fowls (*bouillion*) to show itself absolutely unsuited for the cultivation of the parasite of chicken cholera, while it is admirably adapted to the cultivation of a multitude of microscopic species, notably to the *bactéridie charbonneuse*. (*Bacillus anthracis*, Koch.)

"The explanation to which these facts conduct us, as well of the constitutional resistance of some individuals, as of the immunity produced by protective inoculations, is only natural when we consider that every culture, in general, modifies the medium in which it is effected; a modification of the soil when it relates to ordinary plants; a modification of plants or animals when it relates to their parasites; a modification of our culture liquids when it relates to *mucédines*, *vibrioniens*, or ferments.

"These modifications are manifested and characterized by the circumstance that new cultivations of the same species in these media, become promptly difficult or impossible. If we sow *chicken-bouillion* with the microbe of cholera, and, after three or four days, filter the liquid in order to remove all trace of the microbe, and subsequently sow anew, in the filtered liquid, this parasite, it will be found quite powerless to resume the most feeble development. The liquid, which is perfectly limpid after being filtered, retains this limpidity indefinitely.

"How can we fail to believe that by cultivation in the fowl of the attenuated virus, we place its body in the state of this filtered liquid, which can no longer cultivate the microbe? The comparison can be pursued still further; for, if we filter the *bouillion* containing the microbe in full development, not on the fourth day of the culture, but on the second, the filtered liquid will still be able to support the development of the microbe, although with less energy than at the outset. We comprehend, then, that after a cultivation of the modified (*attenué*) microbe in the body of the fowl, we may not have removed from all parts of its body the aliment of the microbe. That which remains will permit, then, a new culture, but in a more restricted measure.

"This is the effect of a first inoculation; subsequent inoculations will remove progressively all the material necessary for the development of the parasite

"Is this the only possible explanation of the phenomenon? No, we may admit the possibility that the development of the microbe, in place of removing or destroying certain matters in the bodies of the fowls, adds, on the contrary, something which is an obstacle to the future development of this microbe. The history of the life of inferior beings authorizes such a supposition. The excretions resulting from vital processes may arrest vital processes of the same nature. In certain fermentations we see antiseptic products make their appearance during, and as a result of, the fermentation, which put an end to the active life of the ferments, and arrest the fermentations long before they are completed. In the cultivation of our microbe, products may have been formed the presence of which, possibly, may explain the protection following inoculation.

"Our artificial cultures permit us to test the truth of this hypothesis. Let us prepare an artifical culture of the microbe, and after having evaporated it *in vacuo*, without heat, let us bring it back to its original volume by means of fresh chicken *bouillion*. If the extract contains a poison for the life of the microbe, and if this is the cause of its failure to multiply in the filtered liquid, the new liquid should remain sterile. Now, this is not the case. We cannot, then, believe that during the life of the parasite certain substances are produced which are capable of arresting its ulterior development."

The last hypothesis advanced by Pasteur as the only alternative of the one first offered, seems to be disproved by the experiments cited, so far as chicken cholera is concerned; and in the case of vaccination we can hardly conceive that an antiseptic substance can be produced, during the development of the vaccine vesicle, in such quantity as to protect the individual for years, or for life, from the effects of the smallpox virus. We may, then, dismiss this hypothesis; but, as I shall endeavour to show shortly, this does not leave us without any alternative but to accept the hypothesis first offered, viz., the exhaustion of some material necessary to the development of the poison germ, bioplast, or whatever it may be, in the system of man or animals, by a single attack of any one of the specific diseases.

Let us see where this hypothesis leads us. In the first place, we must have a material of smallpox, and a material of measles, and a material of scarlet fever, etc. etc., for an attack of one of these diseases does not protect from any of the others. Then we must admit that each of these different materials has been formed in the system and stored up for these emergencies—attacks of the diseases in question—for we can hardly conceive that they were all packed away in the germ-cell of the mother and the sperm-cell of the father of each susceptible individual. If, then, these peculiar materials have been formed and stored up during the development of the individual, how are we to account for the fact that no new production takes place after an attack of any one of the diseases in question?

Again, how shall we account for the fact that the amount of material which would nourish the smallpox germ to the extent of producing a confluent case of smallpox may be exhausted by the action of the attenuated virus introduced by vaccination? Pasteur's comparison of a fowl protected by inoculation with the parasite of chicken cholera, with a culture fluid in which the growth of a particular organism has exhausted the pabulum necessary for the development of additional organisms of the same kind, does not seem to me to be a just one, as in the latter case we have a limited amount of nutriment, while in the former we have new supplies constantly provided of the material—food—from which the whole body, including the hypothetical substance essential to the development of the disease-germ, was built up prior to the attack. Besides this, we have a constant provision for the elimination of effete and useless products.

This hypothesis, then, requires the formation in the human body, and the retention up to a certain time, of a variety of materials, which, so far as we can see, serve no purpose except to nourish the germs of various specific diseases, and which, having served this purpose, are not again formed in the same system, subjected to similar external conditions, and supplied with the same kind of nutriment.

The difficulties into which this hypothesis leads certainly justify us in looking further for an explanation of the phenomenon in question.

This explanation is, I believe, to be found in the peculiar properties of the protoplasm, which is the essential framework of every living organism. The properties referred to are: the tolerance which living protoplasm may acquire to certain agents which, in the first instance, have an injurious or even fatal influence upon its vital activity, and the property which it possesses of transmitting its peculiar qualities, inherent or acquired, through numerous generations, to its offshoots or progeny.

There can be but little doubt that protoplasm is the essential living portion of the cellular elements of animal and vegetable tissues, but as our microscopic analysis of the tissues has not gone beyond the cells of which they are composed, and is not likely to reveal to us the complicated molecular structure of the protoplasm upon which, possibly, the properties under consideration depend, it will be best for the present purpose to limit ourselves to a consideration of the living cells of the body. These cells are the direct descendants of pre-existing cells, and may all be traced back to the sperm-cell and germ-cell of the parents. Now, the view which I am endeavouring to elucidate is, that during a non-fatal attack of one of the specific diseases the cellular elements implicated which do not succumb to the destructive influence of the poison, acquire a tolerance to this poison which is transmissible to their progeny, and which is the reason of the exemption which the individual enjoys from future attacks of the same disease.

The known facts in regard to the hereditary transmission, by cells, of acquired properties, make it very easy to believe in the transmission of such a tolerance as we imagine to be acquired during the attack, and if it is shown by analogy that there is nothing improbable in the hypothesis that such a tolerance is acquired, we shall have a rational explanation, not of heredity and the mysterious properties of protoplasm, but of the particular result under consideration.

The transmission of acquired properties is shown in the budding and grafting of choice fruits and flowers, produced by cultivation, upon the wild stock from which they originated. The acquired properties are transmitted indefinitely, and the same sap which on one twig nourishes a sour crab-apple, on another one of the same branch is elaborated into a delicious pippin.

Numerous examples in illustration of the same fact may be drawn from the animal kingdom; thus, the same mother may give birth to two children by different fathers; the one may inherit a predisposition to consumption, and the other to insanity; and this inheritance, which only manifests itself at the end of many years, has been transmitted from the original sperm-cells of the respective fathers through countless generations of cells which have lived and died, leaving their progeny to perform their functions.

The immunity which an individual enjoys from any particular disease

must be looked upon as a power of resistance possessed by the cellular elements of those tissues of his body which would yield to the influence of the poison in the case of an unprotected person. There is every reason to believe that it is upon the living portion of the tissues, or the protoplasm of the body, that the disease-poisons act; for if it were upon non-living matter—formed material, Beale—and we had to deal only with chemical phenomena, it would be impossible to account for the fact that like causes do not always produce like results. On the other hand, the resistance of living matter to certain destructive influences is a property dependent upon vitality. Thus, living protoplasm resists the action of the bacteria of putrefaction, while dead protoplasm quickly undergoes putrefactive changes. Again, it seems probable that in conditions of debility from age, sickness, starvation, or any other cause, the vital resisting power of the protoplasm is reduced, and certain agents which, under more favourable conditions, would be powerless for harm, may overcome this vital resistance.

The tolerance to narcotics, opium, tobacco, etc., resulting from a gradual increase of dose, may be cited as an example of acquired tolerance by living protoplasm to poisons, which at the outset would have been fatal in much smaller doses. There can be little doubt that in this instance it is the living protoplasm of the nervous tissues upon which the poison acts to produce its characteristic effects.

But it is in the specific diseases in which a single attack proves protective that I find the best proof that the cellular elements of the body may acquire a tolerance during the attack which being transmitted to their cellular progeny furnishes the protection which the individual enjoys.

Let us take a particular case. In yellow fever the immediate effect of the poison seems to be to arrest vital processes generally—nutrition, secretion, excretion—and in fatal cases we find that the protoplasm of various organs and tissues has undergone degenerative changes; this is especially true of the liver-cells. Now, we have every reason to believe that this occurs in a less degree in non-fatal cases, but that a sufficient number of cells having resisted the destructive influence of the poison, and become accustomed to its presence, resume their functions, and that thus the vital processes upon which the life of the individual depends are again carried on in the very presence of the poison, which at first paralyzed or destroyed the vital activity of certain cells. The case is more striking in smallpox, in which there is an undoubted increase of the poison in the tissues during the progress of the disease, but in the first-mentioned disease the patient commonly remains during his sickness in the infected atmosphere, the breathing of which produced the attack from which he is suffering.

The protection from yellow fever resulting from acclimation—if, indeed, there is such a thing as acclimation independent of an attack of the disease—seems to be a tolerance acquired by repeated exposure to the poison in quantities not sufficient to produce an attack.

The tolerance enjoyed by the negro race to the malarial poison is probably the result of long residence in malarious regions. Natural selection has doubtless come into play here in establishing this tolerance as a race peculiarity.

I would, then, place acclimation, inoculation by attenuated viruses, and an attack of any one of the specific diseases, all in the same category so far as the explanation of the protection afforded is concerned; and, according to my view, the explanation of this phenomenon is to be found in the peculiar properties of living protoplasm which enable it, within certain limits, to adapt itself to varying conditions and injurious influences, and to transmit the impression or modification received in so doing, to its offshoots, which continue to perform its functions during the life of the individual.

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## ARTICLE VII.

### OÖPHORECTOMY FOR FIBROID TUMOURS OF THE UTERUS. By G. H. BALLERAY, M.D., of Paterson, New Jersey.

THAT oöphorectomy is destined to be the operation of the future in cases of bleeding fibroid tumour of the uterus, which has resisted all other treatment, which is not susceptible of removal through the vagina, and in which it is evident, that, unless the hemorrhage is arrested, the patient must inevitably perish, can hardly admit of a doubt.

The study of the natural history of cases of uterine fibroid has shown, that, after the menopause, it often ceases to trouble the patient, gradually dwindles away, and finally entirely disappears. It is therefore not to be wondered at that the idea should have suggested itself to surgeons to endeavour to bring about this condition artificially by the removal of the ovaries. It is often a difficult matter to decide upon the proper time for the performance of the operation, inasmuch as, in many cases, after the patient has been reduced to a condition of extreme anæmia from profuse hemorrhage, there is a temporary improvement, which is generally attributed to the use of some one of the fashionable remedies for these cases, which, in all probability, has nothing whatever to do with it. In consequence of these deceptive lulls, the operation is sometimes postponed until the patient is reduced to such a condition of weakness that any operation would be attended by more than the usual danger. The blind faith in drugs which some men exhibit, is to me incomprehensible. How an intelligent physician can go on month after month, pouring medicine into the stomach of a patient who is slowly but surely dying of hemorrhage from a uterine fibroid, is difficult to understand.

The hypodermic injection of ergotine is also sometimes persisted in for

months, when it is evident that it is not doing the slightest good. To thus persist in the use of ineffectual remedies, which involve a loss of valuable time, is highly reprehensible. Therefore, while I would not advocate a resort to surgical interference so long as the hemorrhage can be kept in check by rest in the recumbent posture and the administration of those drugs which are theoretically indicated, and which, as claimed by some, not only diminish the hemorrhage, but actually diminish the size of the tumour, I would most earnestly advise a resort to surgery, before the patient is almost moribund, in those cases in which, notwithstanding the use of the most approved remedies, the patient is steadily getting worse. I have lately seen a case of uterine fibroid in which Mr. Knowsley Thornton performed oöphorectomy successfully. The patient had been allowed to get into a condition of extreme exhaustion from metrorrhagia before Mr. Thornton saw her. Although this patient recovered, I think her recovery is to be attributed more to good luck than good management, so far as her attending physician is concerned. In one of Mr. Tait's fatal cases of oöphorectomy for uterine fibroid, the patient was actually moribund from repeated hemorrhages when the operation was performed. I know of another case, which has been seen in consultation by one of the most skilful ovariotomists in London, but that gentleman declined to operate because the patient was so weak, from long-continued loss of blood, that he feared she would die on the operating table. Why, in a city like London, which can boast of several of the most skilful ovariotomists in the world, a patient should be allowed to get into a condition (to which she has been gradually tending for months) of such extreme prostration as to deter a most skilful and courageous operator from giving her the only chance for her life by an operation which, if done earlier, probably would have been successful, is a question hard to answer. But it would seem as though there must have been either gross ignorance or wanton dereliction of duty on the part of somebody.

The duty of the surgeon in these desperate cases seems to me to be perfectly clear. The rule by which he should be governed is this: If without an operation the patient *must* die, and if an operation holds out any hope of success, however slight, and if the patient, understanding the facts of the case, elect the operation, it is the *duty* of the surgeon to perform it. By acting in accordance with this rule, the surgeon may occasionally subject himself to the charge of being rash, his decision and courage being mistaken for temerity, but no *true* surgeon should ever hesitate to hazard his reputation in the performance of professional duty.

Having thus far spoken in favour of the operation in suitable cases, I will now refer to the difficulties which often attend its performance, and I believe that these can best be illustrated by citing cases which have come under my own observation.

In the early part of last month I saw Mr. Thornton attempt to perform oöphorectomy in a case of uterine fibroid. The tumour reached to the umbilicus. The usual abdominal incision was made, and the left ovary brought into view, transfixed, tied, and removed without difficulty. There was no great difficulty experienced in reaching the right ovary, but its pedicle was short, and in drawing upon it so as to bring the ovary into view sufficiently to enable him to transfix and tie the pedicle, Mr. Thornton had the misfortune to split the peritoneal covering of the uterus and open some enlarged veins lying immediately beneath it. Free hemorrhage followed, which he endeavoured in vain to control by passing a needle, armed with a ligature, beneath the veins and ligating them; but every puncture of the needle was followed by increased bleeding. The abdominal incision had been extended above the umbilicus, and the uterus, with the tumour, turned out of the incision so as to expose thoroughly the part from which the hemorrhage proceeded. The actual cautery was now applied, but with no better result, the blood continuing to well up in streams from the wounded veins. Finding that there was no alternative, Mr. Thornton proceeded to extirpate the tumour with a portion of the uterus. A semicircular incision from below upwards, on the right side, was quickly made down to the tumour, and the latter raised from its bed by passing the fingers beneath it and enucleating it. Its removal was then accomplished by another incision on the opposite side, similar to the first, making, as it were, a double flap operation. The uterine cavity was not opened. After the bleeding vessels had been secured, the uterine wound was closed by the *uninterrupted* suture, and the uterus replaced in the abdominal cavity. The woman died on the *third* day after the operation, partly from septicæmia.

The operation was commenced after 4 P. M., and by the time that it became evident that the tumour must be removed it was nearly dark; in fact the operation was finished by candlelight; consequently Mr. Thornton hurried through the final steps of the operation more than he otherwise would have done. To this may be attributed the subsequent internal hemorrhage which proceeded from vessels which had ceased to bleed while the patient was under the influence of the anæsthetic, and which might have been more efficiently secured had there been more time and a better light to work by. In another case in which the same accident happened to Mr. Thornton during the operation of oöphorectomy, he performed hysterectomy with a successful result.

Three weeks ago I saw Dr. Geo. Granville Bantock perform oöphorectomy at the Samaritan Hospital in a case of fibroid tumour of the uterus.

The tumour reached to within an inch and a half of the umbilicus. The usual incision was made, and the left ovary removed without difficulty. The removal of the second ovary, however, was found impracticable. The pedicle was very short, and the ovary was lying directly behind the uterus, and at first could not be felt. After enlarging the incision up to the umbilicus, Dr. Bantock introduced his hand into the abdomen and passed it as far behind the tumour as possible; but he could barely feel the ovary, which seemed small and atrophied. Finding that it was impossible to reach the ovary without using unjustifiable force, Dr. Bantock closed the incision and put the patient to bed. The ovary which

was removed contained a Graaffian follicle just about to rupture. The subsequent progress of this case was very satisfactory. The temperature never rose above 101°, and only reached that point for a few hours on the second day after the operation. At the menstrual period following the operation the patient lost very little blood; it is, therefore, to be hoped that the ovary which was removed was the active organ, and that the other being atrophied the operation will prove a success.

If the operation of oöphorectomy, in cases of fibroid tumour of the uterus, presents difficulties which tax to the utmost the skill and judgment of such operators as Bantock and Thornton, I hope that it is scarcely necessary for me to caution less skilful and less experienced professional brethren against undertaking the performance of this operation without a due appreciation of their own responsibilities, and without a distinct understanding on the part of the patient or her relatives of the difficulties[1] and dangers of the operation. As to the method of performing the operation my own preference would certainly be in favour of *abdominal* section. Oöphorectomy by *vaginal* section, as suggested by Goodell, will be found impracticable in the vast majority of cases of uterine fibroid requiring the removal of the ovaries. I cannot see the wisdom of the recommendation of Dr. Goodell to attempt the removal of the ovaries through the vagina *first;* and failing in that to proceed to remove them by abdominal section. It certainly cannot be advisable to subject a patient to two operations if one will suffice. If abdominal section is the best adapted to the most difficult cases, then it follows that it is the best in *all* cases; for one never can tell beforehand what difficulties we may encounter in any given case.[2]

If Dr. Goodell had the fear of wounding the peritoneum before his eyes when he advised the vaginal in preference to the abdominal section, then I must say that I think his fears are groundless. The experience of all ovariotomists tends to prove that *traumatic* peritonitis is *exceedingly rare;* and Mr. Lawson Tait, whose experience in oöphorectomy is probably greater than that of any other surgeon, informs me that he has never lost a patient, after that operation, from traumatic peritonitis.

My object in the foregoing pages has been to urge upon my professional brethren the *necessity* of oöphorectomy in cases of uterine fibroma attended

[1] An interesting case illustrating the difficulties of this operation, reported by Dr. M. D. Mann, of Hartford, Conn., will be found in the *American Journal of Obstetrics*, Oct. 1880.

[2] I do not wish to be understood as asserting that vaginal oöphorectomy is *never* preferable to oöphorectomy by abdominal section. I have recently seen several cases of prolapsed ovaries, with chronic ovaritis and retroflexion of the uterus, which have caused great and prolonged suffering, and which have not been amenable to treatment. In these cases the question was raised by the medical attendant as to whether or not oöphorectomy would be justifiable. I believe it would, and that the operation by vaginal section might possibly, in these cases, be preferable to that by abdominal section.

by profuse hemorrhage, before the patient is reduced to such a condition that the operation can only be undertaken as a *forlorn hope*, and, at the same time, to call attention to the difficulties of the operation and the necessity, or at least advisability, of informing either the patient or her relatives of its possible dangers.

LONDON, Nov. 15, 1880.

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## ARTICLE VIII.

### SOME POINTS IN THE PATHOLOGY OF OCULAR LESIONS OF CEREBRAL AND SPINAL SYPHILIS, ILLUSTRATED BY CASES.

By CHARLES STEDMAN BULL, A.M., M.D.; Lecturer on Ophthalmology in the Bellevue Hospital Medical College, New York; Surgeon and Pathologist to the New York Eye Infirmary.

LESIONS of the eye and its extrinsic muscles, functional and organic, due to syphilis, and having their origin located in the brain and spinal cord, have been known for many years, and isolated cases have been reported as far back as the middle of the last century, though the clinical history of such cases is very defective, and their pathology either very faulty or entirely ignored. Of late years, however, this subject has been more and more carefully studied from a true scientific standpoint, and it is mainly to the labours of Hughlings Jackson, Lancereaux, and especially of Fournier, and Mauriac, that we owe our knowledge of the pathology of syphilis of the nerve centres with peripheral manifestations. We know now that these ocular symptoms may be developed at any age of the so-called tertiary period, but also that they may be more or less precocious, occurring not infrequently within the first year of constitutional infection, and sometimes as early as the third or fourth month. On the other hand they may be postponed to a very late period, and cases have been reported where the interval between the occurrence of the initial lesion and the appearance of ocular lesions has been twenty years and more, and where no suspicion has been excited of the patients having contracted the disease *de novo*. According to recent statistics cerebral syphilis seems to be most frequent between the third and the eighteenth year after infection, and of all the symptoms of this variety of syphilitic lesion, there are probably none so frequent as those of paralysis of the cranial nerves. Of these, the most common are paralyses of the oculo-motorius, and these are followed in the order of frequency, by paralyses of the optic, auditory, and facial nerves, and at a longer interval by paralyses of the olfactory and trifacial. It is the belief of the writer that these ocular paralyses are frequently the initial symptom of cerebral syphilis. Of course there are instances where the paralysis is only the consequence of a peripheral lesion, as in cases where only one ocular muscle is paralyzed, but these cases are not common and they are excluded from consideration here.

The oculo-motor nerves are more exposed than other cranial nerves to be attacked by intra-cranial lesions, because they run a long course at the base of the skull before entering the orbit, in contact with the meninges and over a bony floor, and in a region where syphilitic intra-cranial lesions are most common.

Syphilitic paralyses of the ocular muscles are generally insidious and rapid in their onset, without being sudden, though they are not always so. There may be frequent though transient attacks of diplopia before the paralysis becomes finally established, and the paralytic phenomena may be preceded by fleeting attacks of headache. Moreover the paralyses are very often incomplete, so that the patient complains of diplopia, though no squint is visible, and the paralysis can then only be determined by testing the eyes with coloured lights or coloured glasses, or the other methods ordinarily in use for deciding which muscle or group of muscles is affected. Paralysis of the third nerve may affect only certain branches of the nerve, or even a single branch; for we may meet with paralysis of the levator palpebræ and superior rectus, or paralysis of the internal rectus alone, or of the superior rectus, alone; or there may be ptosis alone, or in rarer cases there may be mydriasis, with or without paralysis of accommodation, no extrinsic muscle being involved.

We also know that one or more groups of ocular muscles may be paralyzed by a syphilitic cerebral lesion, for both third nerves may be affected, or the third nerve of one eye and the sixth nerve of the other. Finally there are some rare cases in which all the motor nerves of both eyes are found involved. According to Fournier motor paralyses of the ocular muscles have a double significance: 1st. They furnish strong suspicion of the existence of syphilis as a cause; and 2d. They announce an imminent danger in revealing an intra-cranial lesion, which may extend and attack the cerebral centres. Ricord goes even farther than this, and considers that paralyses of the motor nerves of the eyes are positive signs of syphilis; a statement altogether too sweeping in its character, and the truth of which is contradicted almost daily. That they occur very frequently in syphilis is however well known, the proportion being about 75 per cent. The liability of these nerves to become involved in any process at the base of the brain or skull, especially of an inflammatory nature, while due as already stated to their topographical anatomy, is also enhanced by the fact that they are surrounded for a certain distance in their course by an external sheath which is a prolongation of the dura mater, and by an inner fibro-cellular sheath which is a prolongation from the pia mater. Now when either or both of these membranes become inflamed, the resulting hyperplasia causes a thickening of these sheaths, the nerve is compressed and strangulated, degenerates and eventually atrophies. This is the pathology of not a few of the cases of motor paralysis in the eye, following some form, probably inflammatory, of cere-

bral syphilis. As regards the value of motor paralysis of the ocular muscles as an evidence of constitutional syphilis, in the absence of other symptoms, the question is by no means settled. We may be aided in the diagnosis if the patient is the subject of a paralysis of disconnected muscles, as in the case of ptosis with paralysis of the superior oblique muscle. A symmetrical paralysis cannot be regarded as proof of a syphilitic origin, for symmetry and uniformity are not always special attributes of syphilis in any of its stages. Dowse mentions, among the protean manifestations of nerve syphilis, its instability of character and its tendency to spontaneous resolution, both of which have been often seen in the domain of the ocular muscles; and he mentions having seen a pseudo-ptosis and contraction of the pupil in a case where the third nerve was probably not directly affected, due probably to syphilitic disease of the dura mater. The writer has seen in several cases of constitutional syphilis a transient ptosis of one side passing off in a few hours or days and giving place to a ptosis of the opposite side, accompanied by partial paralysis of the internal rectus of the corresponding eye, and Dowse states that a not uncommon symptom in the early period of cerebral syphilis is a divergent squint of one eye, followed in twenty-four hours by complete muscular co-ordination, to be succeeded later by complete paralysis of one or more muscles.

In the majority of cases paralysis of the extrinsic muscles of the eye, excluding those caused by lesions in the orbit and optic foramen, which are due to bone disease, are produced by some trouble at the base of the brain, usually in the meninges, of a diffuse or circumscribed inflammatory character. This is usually, though not always, caused by a neoplastic growth, which may be either a sclerosis or a gumma, the histological character of both being a hyperplasia of the cellular elements. The sclerosis is probably the result of rapid proliferation which ends in a permanent development of fibrous tissue. This may occur on the meninges, or along the vessels, or in and around the nerve fibres. The gumma is also a proliferation of the cellular elements of slower growth, and perhaps lower organization, and according to some authorities carries with it a tendency to degeneration, which under treatment ends in a granular or fatty condition, and its elements are then absorbed. Fournier regards meningeal sclerosis as the more common form, and says that though it involves the dura and pia mater, the arachnoid is very rarely affected. Our knowledge of meningeal gummata is still in an extremely unsatisfactory state. It is probable that they are oftenest met with in the dura mater, and that their habitual seat is at the base of the brain, between the optic chiasm and the basilar fossa. But they have been known to occur on the convexity of the hemispheres and to be accompanied by ptosis, without any discoverable lesion at the base. Fournier describes two forms, one a circumscribed tumour, and the other a diffuse infiltration like a membrane,

which reminds one of meningeal sclerosis rather than a gumma. Another point in pathology is that post-mortem examinations of patients who have died with all the symptoms of meningeal gummata, show no gummata whatever, but do show cicatrices where the gummata were supposed to have been, either as depressions in the dura mater, or as cicatricial bands in and upon the dura and sometimes in the convolutions. The occurrence of the sclerosed process in the meninges or in the sheaths of the cranial nerves is the probable explanation of the reason why some cases of motor paralysis of the muscles of the eye are never benefited by antisyphilitic treatment, even when carefully and systematically carried out. The patients do not apply early enough for treatment, the nerves are compressed more and more by the contracting process of the sclerosed tissue and finally become incapable of performing their functions from atrophy.

While most ocular paralyses of syphilitic origin are due to a meningeal lesion at the base, it cannot be denied that they may result from circumscribed lesions at certain points of the gray matter of the convolutions, and this is especially so with paralysis of the levator of the lid. That gummy encephalitis is ever diffuse is doubtful, though Fournier admits its existence. Even here where the brain substance is the seat of a gumma, the latter occurs oftener in the anterior lobes and nearer the base than elsewhere. There may, however, be multiple gummata scattered through the brain, and in this sense the gummy encephalitis is disseminate.

As regards the period of constitutional taint at which paralyses of the ocular muscles appear, it does not seem possible to lay down any rule. The statement of Dowse, that the nervous system is rarely if ever affected by the syphilitic poison whilst in the secondary stage, the writer does not think can be accepted. The change from the secondary to the tertiary period is often so very rapid and ill-defined that the cases in which a paralysis of one or more ocular muscles of probably central origin has been found associated with a roseola, are by no means uncommon; and Dowse affirms that he has seen not a few cases in which cutaneous gummata have coexisted with a roseola maculata. Though true gumma of the brain has never been found at an autopsy to coexist with syphilitic roseola, yet a syphilitic meningitis ending in sclerosis may and does exist, in the belief of the writer, in the early secondary stage of syphilis.

A few words in regard to paralysis of individual or isolated muscles. These cases where only one ocular muscle is paralyzed, are not all due to central lesions. It is probable that in a small proportion of such cases, the lesion is an exostosis from the short canal of the optic foramen, or from the orbital wall which presses upon either the nerve filament supplying the muscle in question or upon the tendon of the muscle itself. But another possibility exists, which the writer does not recollect to have seen mentioned: and that is, the development of a gumma in the tissue of the muscle or in its sheath, which in its growth might produce a paralysis of

the muscle, partial if not complete, by continuous pressure. There is no case on record, so far as the writer is aware, of an intra-muscular gumma having been found, but the occurrence is possible, as these growths are not infrequent in muscles elsewhere in the body.

Visual troubles in cerebral syphilis are not so common as paralyses of the motor nerves. They may be due either to lesions of the cerebral parenchyma or to lesions at the base of the brain, whether meningeal or osseous. The lesions may be either directly inflammatory, or they may consist in the growth, perhaps slow and gradual, of a gumma. These lesions at the base may be either in the vicinity of the sella Turcica and optic chiasm, or far back near the centres of origin of the optic nerves. In either case, the optic nerves have been found at autopsies, compressed, degenerated, and atrophied, either by meningeal exudations, or by gummata or by cicatrices occupying the site of former gummata. But another cause of defective vision is to be found in a primitive intrinsic lesion of the optic nerves themselves, a primary atrophy or sclerosis of the optic nerve fibres *per se*, or, what is more frequent, a secondary simple sclerosis of the nuclei of origin, from sclerosis either of the neighbouring brain substance or of the spinal cord. The ophthalmoscope gives evidence in these cases of two different conditions in the ocular end of the optic nerve, one of optic neuritis, the papillitis varying in appearance from simple inflammation with slight œdema and swelling through all the stages up to true "choked disk," with or without hemorrhages, and ending in what is called inflammatory atrophy, with ragged and indistinct outlines; the other a simple white atrophy of the disk, with no signs of any preceding inflammation, and with the outline of the papilla perfectly clear and distinct. These ophthalmoscopic signs demonstrate the existence of a lesion situated in or about the course of the optic nerves at some point posterior to the eyeballs, and probably within the cranial cavity; an encephalic lesion, cerebral or meningeal. But they do *not* demonstrate anything more *precise* or *special* in regard to the *nature* or *location* of this lesion. They are the evidence of a grave lesion, which may lead to most serious consequences, because it is intra-cranial. The writer believes most earnestly that an ophthalmoscopic examination should always be made whenever a syphilitic patient begins to present symptoms which may be referred to cerebral syphilis, for a well-defined optic neuritis is by no means incompatible with the preservation of visual acuity.

Another interesting point in the pathology of optic neuritis is its chronicity in some cases, without progressive failure of vision. Since the meeting of the Fifth International Congress of Ophthalmology, in New York, in 1876, at which several cases were reported, instances of this kind have been not infrequently noticed. A patient will present himself with a syphilitic history and with the complaint that his vision has been failing for some months, but that lately he has not noticed any change. An

ophthalmoscopic examination shows an optic neuritis or a neuro-retinitis, with more or less swelling and œdema of the nerve and retina, but without the signs of true "choked disk." Repeated and long-continued observation of this case will disclose no change in the ophthalmic picture or in the functional examination of vision. One such case was under the observation of the writer for nearly three years, during which there was no demonstrable change in the fundus or in the vision, and Dr. Mathewson of Brooklyn has reported several such cases.

This optic nerve trouble may be the only ocular lesion of cerebral syphilis, or it may be accompanied by paralysis of one or more of the extrinsic muscles of the eye. Its coexistence with other manifestations of cerebral disease has also been noticed by neurologists, and special attention has been called by Hughlings Jackson to its connection with attacks of unilateral epilepsy. He thinks that the coexistence of these two forms of nerve lesions proves in the majority of cases the existence of a syphilitic lesion of the cerebral convolutions, and Fournier also coincides with this opinion.

CASE I. *Paresis of Left Superior Rectus, Transient and Recurrent Ptosis; Paraplegia; Atrophy of Optic Nerves following Neuritis.*— The patient was a gentleman, æt. 52, a merchant in active business life, who had contracted a venereal disease of some kind twelve years before. He was first seen by me in the summer of 1875. He stated that there were four or five small ulcers on the glans penis and inner surface of the prepuce, which remained unhealed for a long time, though he was under treatment for them. He had several eruptions of the skin, one of which was very general, and several attacks of sore throat. His alopecia had been at one period very marked. There had been an inflammation of the right eye seven years before I saw him, but of what nature it was impossible to say, as the media were clear and there were no patches of pigment upon the lens-capsule, after dilatation of the pupil by atropia. His health had been good even when he was suffering from the constitutional symptoms, but his business kept him very closely confined and was of a harassing nature. He was a moderate smoker, but did not touch alcohol in any form. About two months before I saw him he was suddenly attacked by slight dizziness while walking, and noticed that he saw everything double. When he closed the left eye the dizziness disappeared as did also the diplopia, but returned when both eyes were opened. The vertigo made him stumble, but with this exception he had no head symptom of any kind. In about a month he noticed a drooping of the left upper lid, which increased so far as to nearly cover the eye, and then the diplopia nearly disappeared. When I saw him there were nearly complete left ptosis, slight paretic action of the left internal rectus, and apparently complete paralysis of the left superior rectus. The accommodation was normal for his years, and the pupils were normal in size and reaction. R. E. $V=\frac{20}{20}$, L. E. $\frac{20}{70}$, unimproved by any glass. The media were clear, and there was nothing abnormal in the fundus, except a slight indistinctness in the outlines of the optic papillæ, and a hazy appearance of the left retina between optic disk and macula.

There was nothing abnormal in the heart except a slight feebleness of

beat, and the urine showed neither albumen nor casts, and was of normal reaction and specific gravity. In the absence of any graver cerebral symptoms, a very guarded prognosis was given, though from the syphilitic nature of the disease an unfavourable result was feared. As the patient was seen by me in consultation, I could merely indicate the line of treatment to be followed, and I believe a rigid and systematic anti-syphilitic treatment was persevered in for nearly eight months. I saw the patient from time to time, but could never note the slightest change in the paralysis of the ocular muscles, but shortly after his first visit his difficulty in walking became more marked than could be attributed to the diplopia. There was a slight stagger in the gait, he complained of numbness in his feet and ankles, and a loss of power in the legs; and all these symptoms slowly but steadily increased, until the spring of 1878, since which time he has been entirely paraplegic. At this period the vision began to fail somewhat rapidly, having previously remained unchanged from what it had been when I first saw him; and since April, 1880, he has been able merely to distinguish light from darkness. He was last seen by the writer on Sept. 25, 1880, when there was found absolute amaurosis, there being no perception of bright light. The paresis of the left superior rectus was still present, as well as the unilateral ptosis. There was entire loss of motion below the waist, and very marked anæsthesia as high as the fifth dorsal vertebra, though it was not complete. He was not able to lift his arms above the line of the shoulder, and he could with great difficulty move them across his chest, and scarcely at all backwards. The grasp of the hands was, however, very powerful, and he could still lift very heavy weights from the floor as he sat in a chair. The fingers, however, were flexed upon the hands and the hands upon the wrists. The muscles of the shoulders and scapular regions were markedly affected. The pupils were somewhat contracted and very sluggish, the media perfectly clear, and the optic disks were the seat of gray inflammatory atrophy, with ragged and indistinct outlines, and arteries reduced to mere threads. There were absolutely no head symptoms, the patient's memory was remarkably good, and his mind perfectly clear.

The pathological process induced by syphilis in this case was evidently a sclerosis, not general, but perhaps multiple, of the spinal cord and perhaps of the large ganglia at the base of the brain, most pronounced in the lower dorsal region, but beginning somewhere in the region of the nuclei of origin of the third cranial nerve. The first symptom of any central lesion was the paralysis of the superior rectus and levator palpebræ of one eye, followed by symptoms of spinal paralysis and atrophy of the optic nerves. The sclerosis in the spinal cord was steadily progressive, and was either ascending in its course, or else new foci of degeneration were developed from time to time higher up in the cord. The former supposition is the more probable. It is also probable that the process of degeneration has not attacked the brain, except at the base, as the mental faculties still retain their normal acuteness.

CASE II. *Paralysis of Right Third Nerve and Right Superior Oblique; Subsequent Simple White Atrophy of Optic Nerves.*—The patient was a man, æt. 50, in apparently good health, who had contracted the initial lesion of syphilis six years before. The constitutional symptoms had been

severe, especially those occurring in the skin and periosteum, but there had never been any affection of the eyes until nine months before I saw him. At that period, coincident with a general eruption upon the skin, he began to see double and the right upper lid began to droop. These symptoms rapidly grew worse, the eye soon turned out towards the temple, and the ptosis became complete. The right eye being thus excluded from vision, the diplopia disappeared, but he soon noticed that the vision of the right eye was failing, by closing the left eye, and lifting up the lid of the right eye. During the last two months he has complained of a dull pain in the right eye, and says that the right side of his face and head felt *numb*.

An examination showed complete paralysis of the right superior oblique and the branches of the right oculo-motorius, with secondary contraction of the right external rectus muscle. The pupil was moderately dilated and immovable. There was no anæsthesia of the cornea, but on the right side of the face and neck and on the right parietal region the sensibility was decidedly reduced. Ophthalmoscopically there was no abnormal appearance in either eye except a small sclero-choroiditis posterior. Vision in the R. E. was $\frac{15}{30}$, in the L. E. $\frac{15}{xv+}$.

This patient was immediately placed upon a strict anti-syphilitic treatment, his diet carefully regulated, and his use of tobacco entirely stopped, but there was no change produced in the paralytic condition of the ocular muscles, though the treatment was carried on for a period of ten months, and the doses of potassium iodide steadily increased until he took six drachms daily. At the end of the second month the optic nerve in the right eye began to show signs of simple white atrophy, and about one month later the same signs made their appearance in the left eye. Previous to this the field of vision began to be concentrically but somewhat irregularly narrowed, first in the right eye, afterwards in the left. In spite of all treatment, including regular and long-continued use of strychnia and the galvanic current, the optic nerve atrophy progressed slowly but surely, and, when last seen about two months ago, the patient could only distinguish fingers when held close before his face.

In this case also the process was a sclerosis, which probably began in the vicinity of the origin of the third and fourth cranial nerves on the right side, and extending slowly so as to involve one optic tract, if not the origins of both optic nerves. How long back the degeneration in the course of the optic nerve fibres began it is impossible to say, for the patient complained first of failing vision in one eye, then in the other, followed by narrowing of the fields of vision, before there was ophthalmoscopically any evidence of optic nerve trouble. The sclerosis was probably continuous in this case from behind forward, and not a multiple process. The degeneration of nerve fibres was descending at least in the optic nerves, and probably also in the oculo-motorius and patheticus. The lesion may have involved only one tract, and not have extended to the nucleus of origin of the other side, for the sclerosis, being progressive, would have extended down one tract to the optic chiasm, and thence involved both optic nerves. The field of vision in this case was somewhat different from

what is usually met with in cases of central lesion, for though the limitation was somewhat irregular, yet the tendency to concentric limitation was more marked than to sector-like defects. In this second case, as in the first one, the process of sclerosis had proceeded far enough to cause positive degeneration of nerve fibres, and hence the failure of the treatment to produce any improvement is explicable; while the steady diminution of vision is good evidence of the early extensive destruction produced by the lesion. This case also presented some unusual pathological features, if we accept the views of Fournier and Mauriac. These authors state that when the skin and periosteal lesions are severe, the subsequent lesions of the nervous system are usually slight. But this patient had suffered severely from lesions of the skin and periosteum, which did not, however, preserve him from disastrous consequences when his nervous system became involved.

CASE III. *Optic Neuritis ending in Atrophy of the Right Optic Nerve.*—The patient was a gentleman, æt. 48, of wiry constitution and nervous temperament, who contracted a chancre in June, 1877. The constitutional lesions had been severe, especially those of the mucous membranes, the faucial ulceration having been extensive. The patient was rheumatic and had suffered from chronic rheumatism for years. The chancre resisted treatment until a general roseola appeared, which was rapidly followed by a papular syphilide, and then the initial sore began to heal. During the summer the adenopathy was very marked, as well as the cutaneous lesions and the alopecia. Early in October he had an attack of cerebral trouble, ushered in by headache and some fever, which was probably a mild form of localized meningitis. Under large doses of potassium iodide he recovered from this attack, but his gait became unsteady and slow. On November 24, 1877, he suddenly lost the sight of the right eye, the amaurosis being complete for about fifteen minutes, and then the vision began slowly to return. When I first saw him, his vision was $\frac{15}{XL+}$ in both eyes with the myopia corrected, and ophthalmoscopically there was a small posterior staphyloma in each eye, with pigmentary atrophy of the choroid at the periphery. Between Nov. 24th and Dec. 17th, the patient had five similar attacks of total loss of vision, with gradual return of sight, but after each attack the vision never regained the standard held before the attack, and the duration of the stage of blindness was prolonged. On Dec. 17th the patient, who had previously been free from head-symptoms, had a violent attack of localized meningitis, with intense pain in the head, ending in wild delirium, and high fever. Vision was again at once lost completely in the right eye; and when, after four weeks of high fever and either wild delirium or a semicomatose condition, an opportunity could be obtained of testing his vision, it was found that he could only count fingers at one foot. The ophthalmoscope showed all the signs of "choked disk" in the stage of decline; the papillitis involving the entire head of the nerve, but most marked in the nasal half, several small hemorrhages upon the margin of the disk, the arteries very much reduced in calibre, and the surrounding retina œdematous and infiltrated. Under the combined use of mercury, large doses of potassium iodide, and hypodermic injections of strychnia, his vision slowly improved so that he could

distinguish the letters of Sn. XL at six inches; and under constant treatment it remained at this point for nearly two months. But in the end of March, 1878, the atrophy of the nerve and retina was very pronounced, and proved to be progressive as vision steadily failed. The arteries became mere threads, the veins were also very small, and the choroidal atrophy was much more extensive. In October a final examination showed absolutely no perception of light, a dirty gray atrophy of the disk, except on the temporal side where it was brilliantly white, and the pupil moderately dilated and almost immovable. There had, however, been no return of the head symptoms, there was then no symptom of constitutional syphilis, and the other eye had remained intact throughout.

This case is of considerable interest, as illustrating severe nerve lesions of central origin at an early period of constitutional syphilis. The chancre was contracted in June, and the first cerebral symptoms occurred a little more than four months later. The initial lesion resisted treatment obstinately, and did not begin to heal till a papular syphilide showed itself nearly two months later. The cutaneous and glandular lesions were severe, and hence we should have expected that the nerve lesions would be but slightly marked, instead of being of the most severe type. The transient and recurring attacks of blindness are of great interest. There was no plugging of artery or veins in this case, for the ophthalmoscopic signs were not those of embolism or thrombosis; nor would recovery of vision have occurred in either of the latter instances, except to a very slight degree. It is probable that the blood supply to the nerve and retina was interfered with by an exudation within the cavity of the skull at the base of the brain, and in the anterior fossa on the right side, in front of the optic chiasm; otherwise, the left optic nerve would also have shown symptoms of being interfered with. Whether the exudation pressed upon the ophthalmic artery, or directly upon the internal carotid, or had extended down beneath the sheath of the nerve, directly compressing the nerve fibres as well as the central artery of the retina, it is impossible to decide. It is certainly a rare occurrence to find a basilar meningitis so localized as to be confined to a limited region of one fossa of the skull, unless it be of traumatic origin. That the exudation occupied a limited space is certain, whatever may be said of the meningitis, for although the right optic nerve was affected, none of the motor nerves going to the right eye and its appendages were involved. The exciting cause of the meningitis it is not easy to determine, though it is probable that the severe headaches point to the development of a gumma of the dura mater somewhere in the anterior fossa on the right side, which, as it grew, excited an inflammation in the meninges immediately around it. These meningeal gummata sometimes grow with great rapidity, though in general the more rapidly they increase in size, the more likely are they to break down at the centre and undergo retrograde metamorphosis, especially if large doses of potassium iodide are administered.

CASE IV. *Ptosis of Left Side. Bilateral Optic Neuritis.*—The patient was a gentleman, aged 47, at the head of a large manufacturing business, who for years had had a great deal of care and had been closely confined to work. Eleven years before I saw him he had contracted a chancre, followed by very marked adenopathy, and extensive ulceration of the fauces, soft palate, and right wall of pharynx, the cicatrices being very broad and deep. The cutaneous lesions were never very marked and there has been but little alopecia, but he had suffered very severely from periostitis of the cranial bones, clavicle, and extremities, and has a number of very prominent and sensitive nodes upon the tibiæ. For about five weeks before I saw him he had suffered from tremendous frontal headaches, not continuous, but coming on with increasing frequency. One week before he consulted me the left upper lid began to droop, and when I saw him in November, 1875, the ptosis was marked. I found the eyes normal, $V = \frac{15}{xv}$ in both, almost complete ptosis of the left upper lid, and an œdematous condition of both disks that was certainly suspicious. The headache was very violent and now almost constant. There was no fever and no increased temperature or acceleration of the pulse. The increasing pain in the head, the ptosis, and the somewhat rapidly appearing optic neuritis in both eyes led me to suspect periostitis at the base of the skull, anterior to the optic chiasm, or perhaps just beneath it, involving both optic nerves and part of the left motor-oculi nerves, rather than a basilar meningitis. There was no sign of any orbital trouble. The patient was at once ordered to bed, eight leeches were applied to the temples and behind the ears, a large hypodermic injection of morphia was given, and thirty-grain doses of potassium iodide three times daily were ordered to be begun at once. Relief from the pain was only gained by keeping the patient constantly under the influence of opium until the fourth day, when the iodide of potassium began to show its effects; and from this time the headaches were only intermittent and could be easily controlled by slightly increasing the dose. The ptosis however remained unaltered throughout the entire course of the treatment. The optic neuritis became very marked, with all the signs of choked disk, except that there were no hemorrhages, and finally ended in gray inflammatory atrophy, not complete, but confined to the temporal sides of the disks. The patient was under treatment for about four months, and, after all signs of inflammation in the optic papillæ had subsided, injections of strychnia were begun and continued daily for five weeks. Under this treatment the vision in both eyes improved somewhat, so that the patient could recognize Sn. CC at 12 feet eccentrically, and could read with some difficulty Sn. 12 with convex 10 spherical, but only a few words at a time, and then the nerve fibres seemed to fail in their conducting power.

In this case the diagnosis of the lesion rested between periostitis at the base and the rapid growth of a gumma upon the optic chiasm or just posterior to it, pressing upon both nerves and probably upon the left oculomotorius, though only a portion of the fibres of the latter nerve, going to the levator palpebræ, were interfered with. This gumma was in all probability a circumscribed tumour rather than a meningitis gummosa, because of the effects being confined to the optic nerves and a few fibres of the left third nerve. A meningitis gummosa is never as circumscribed as a true gummy tumour, and is apt to so thicken the dura and pia mater as to

compress several of the nerves running forward at the base of the skull near the median line. The absence of any elevation of temperature and of any marked acceleration of the pulse favour the view of a gummy tumour, while the severe pain and the optic neuritis might be due as well to periostitis. Meningitis seems to be excluded by the absence of febrile symptoms. The slight improvement in the vision produced by the hypodermic use of strychnia remained as long as the patient was under observation.

CASE V. *Paralysis of Right Inferior Rectus; Right Ptosis; Deafness, complete on one side partial on the other; Atrophy of Right Optic Nerve.*—The patient was a gentleman, æt. 52, and without any occupation, and was first seen by me in August, 1877. He had contracted the initial lesion of syphilis twenty years before, and this was followed during the first four years by severe constitutional lesions. Then there was an interval of several years during which the symptoms were very slight. Then he began to be troubled with what were probably affections of the peripheral nerves, and he suffered a great deal from neuralgia in various parts of the body. On several occasions he had attacks of diplopia and numbness of face and scalp, which were evidently due to intra-cranial disease of some kind, each attack being preceded by severe headache. These symptoms all subsided under proper anti-syphilitic treatment. About a year before I saw him he began to suffer from all the symptoms of Ménière's disease, which, however, subsided in about seven weeks. Six weeks before I saw him he was again attacked with vertigo, tinnitus aurium, and with a new symptom, that of failing vision in the right eye. When I saw him, an examination showed that the vertigo was probably due to a diplopia caused by paralysis of the right inferior rectus. There was also partial ptosis of the right upper lid. There was complete deafness in the left ear, and very marked loss of hearing in the right ear. The tuning-fork was not heard at all on the left side. The patient had, however, in both ears all the signs of chronic catarrhal otitis media, so that it was not a pure case of syphilis of the auditory nerves or labyrinths. He had noticed steadily increasing deafness in both ears, but more marked in the left ear, for about four years. His vision was $\frac{15}{\text{XXX}-}$ in the right eye, and $\frac{15}{\text{XX}+}$ in the left eye. He could read Sn. 3½ at 22 inches, but his accommodation was completely paralyzed. The pupils were moderately dilated, but there was no paralysis of the sphincters for they contracted sluggishly under light. Ophthalmoscopically there was nothing abnormal except a slight haziness of the temporal portion of the right optic disk. There was no limitation of the field of vision and no subjective symptom of glaucoma. Under the prolonged use of the bichloride of mercury and iodide of potassium, some of the patient's symptoms improved. The accommodation became in great part restored, and the ptosis almost entirely disappeared. But the deafness remained unchanged in spite of the treatment usually adopted for catarrhal inflammation of the tympanic cavity, nor was there any improvement in the tinnitus. The vision in the right eye also failed steadily, and in about a month there appeared signs of atrophy in the outer portion of the disk, with an irregular defect in the corresponding part of the field of vision. Vision sank to $\frac{15}{\text{C}}$, and then slightly improved, possibly as the result of the

hypodermic injections of strychnia, though the potash treatment was continued all the time.

This case is one of considerable interest. There had evidently been transient paralyses of one or more of the ocular muscles at different times, accompanied by partial paralysis of the trifacial nerve, due to some intra-cranial lesion, which yielded to prompt treatment. The nature of these intra-cranial attacks it is difficult to determine. They were preceded by headache, and this, in connection with their sudden onset, would point to a periostitis or to the rapid formation of a gumma of the meninges. Then at a subsequent period came on the group of symptoms known generally under the head of Ménière's disease, which in this particular case are difficult of location. It is known that affections in the sound-conducting apparatus can, under certain circumstances, produce transitory disturbances of the equilibrium without justifying us in assuming organic changes in the labyrinth; and that in affections of the middle ear, attacks of vertigo may be associated with deafness when the morbid process has invaded the labyrinth. A recent writer lays great stress upon cold and upon catarrh of the middle ear, in the causation of Ménière's disease, and says that most of the cases of this disease are of a secondary nature, and are due to inflammatory processes in the tympanum or mastoid antrum. Another writer thinks that only those cases should be considered under the name of Ménière's disease in which the auditory nerve is affected centrally, or in its course, or in its peripheral expansion. This neuropathic form of the disease is so sudden in its onset as to receive from Gottstein the name of apoplectiform. In the case under consideration, the element of difficulty lies in the existence of a chronic catarrhal otitis media of several years' duration. Any exacerbation of symptoms of the tympanic trouble might produce transitory disturbances of the equilibrium, which would disappear in time without treatment. Or the attack here might have been a true neuropathic onset of Ménière's disease, which yielded to anti-syphilitic treatment. The second attack of this Ménière's complex of symptoms was accompanied by failing vision and paralysis of one of the ocular muscles, and this might have given rise to the vertigo. But in view of the optic nerve degeneration, I am inclined to think that there was an intra-cranial lesion at the bottom of the last attack, which involved at least some of the fibres of the motor oculi as well as the optic nerve on the right side. The left auditory nerve was fatally involved at some portion of its course, or more likely at its origin, for the deafness on the left side was absolute. This would seem to contradict the conclusions of a recent investigator, that there is a communicating branch between the two auditory nerves. The pathological process seems to have been a sclerosis, rather than a gumma, but any attempt to locate the lesion with precision is so beset with difficulties, that the conclusion would scarcely be more than conjectural.

## ARTICLE IX.

### A CLINICAL CONTRIBUTION TO THE STUDY OF THE FEVERS OF THE MISSISSIPPI VALLEY.

By RICHARD B. MAURY, M.D., of Memphis, Tennessee.

(Read before the Tri-State Medical Society of Tennessee, Arkansas, and Mississippi.)

BY way of introduction to the subject which I propose to discuss in this paper, the attention of the reader is invited to the following description of bilious remittent fever, taken from Wood's *Practice of Medicine*.

"Remittent or bilious fever occurs more or less in almost all parts of the United States, lying between the Northern Lakes and the Gulf of Mexico. . . . The situations in which the disease is most prevalent, are the valleys of streams, the borders of lakes or ponds, the neighbourhood of marshes, and the rich prairies of our Western States. . . . . It is, in general, a much more serious disease in the southern and southwestern sections of the United States, than in those portions of the North which are still within the limits of its prevalence. But the disease is not confined to this country; it is endemic almost everywhere in hot climates, and especially where heat, moisture, and decaying vegetable matter act conjointly. . . . . It is the disease of whose ravages in the East Indies, Africa, the Mediterranean, and South America, we have heard so much; which has depopulated the Campagna of Rome, and rendered intertropical Africa uninhabitable by whites."

Further quoting and condensing from the same source, we learn that this fever is usually ushered in by a chill. Its characteristic features are headache, backache, and great restlessness; nausea and vomiting of bile; thick, white or yellow coating on the tongue; epigastric tenderness; a yellowish hue of skin and conjunctiva; constipation, and scanty, high-coloured urine. These symptoms are not all present in every case, but they are all so often to be met with that they could not be omitted in an account of the disease.

The first paroxysm of fever is generally followed by a marked remission after twelve or eighteen hours, and each day there may be a distinct remission, or the fever may assume a comparatively continuous form from the start.

If the disease retain a distinct paroxysmal character, it generally runs on, when not interrupted, for two or three weeks or more, terminating at last in a spontaneous solution at the end of one of the paroxysms, or in a regular intermittent, or in a kind of low typhoid affection.

If it approach the continued form, it generally advances to some point of time between the seventh and fifteenth days, when it either declines or ends fatally, or takes on a new character.

When it is to terminate favourably, it either declines slowly from the culminating point, or ends abruptly by profuse sweating, diarrhœa, or diuresis, or changes into the intermittent form.

In not a few cases, instead of following one of the courses above indicated, it takes on, about the ninth or twelfth day, a character resembling enteric fever. Then all regularity in the recurrence of the paroxysms

ceases, and a typhoid state ensues. Under these circumstances, the fever runs on for three or four weeks or more.

The average duration of bilious fever in all its forms may be stated at about fourteen or fifteen days. It sometimes ends as early as the fifth or seventh, or about the ninth or eleventh; and is sometimes greatly protracted, even to four weeks or more.

The description given by Flint in his work on "Practice" agrees, in all important particulars, with that which has just been quoted from Wood; and neither of these authors differs materially from Dr. Drake, as he has expressed himself on this subject in "The Diseases of the Interior Valley." After residence, as a physician, for twenty years in the Mississippi Valley, with the amplest opportunities for studying this subject, I can say most positively, that such a disease as that depicted by the eminent authors just quoted, has never fallen under my eye.

Making allowance for the protean forms in which malarial fevers appear, I cannot find in this description a faithful portraiture of bilious remittent. If such a description were true, there could be no rational indications for prognosis or treatment; and it would be impossible to have a clear idea of the course or duration of the disease in any given case.

The field of my observation has been a very varied one—along the river bottoms and in the hills, in civil practice and in military service, from the southern portion of Mississippi to the northern, in West Tennessee and in Southern Alabama—regions in which malarial diseases appear in every possible form, and where the poison manifests its influences in every degree of intensity.

Dr. Wood's description is, I believe, in reality a description of two entirely distinct forms of disease. One of these forms of fever is of short duration, and may, with perfect propriety, be styled bilious remittent, or malarial remittent. In its course and duration it is as well defined, and as distinctly limited, as acute pneumonia or any other fever with which we are acquainted.

The second of these forms of fever is one which may, with equal propriety, be called malarial continued. It also runs a definite course, which, like typhoid, may be divided into stadia. It is self-limited, and cannot be jugulated or shortened by any known means.

Speaking from my own observation, and after conference with very many of my professional brethren in various localities, the malarial fevers which prevail throughout the southern portions of this valley may be classified as—

I. Malarial Intermittent.
II. Malarial Remittent.
III. Malarial Continued.

Since it is quite as impossible to study fevers without a chart of their thermometric range, as it is to compare different routes for the building of

a railroad without having before us a profile outline of the surfaces upon which it is to be laid, I shall illustrate the subject to be presented by carefully prepared charts of temperature.

Passing by the discussion of intermittent fever, I proceed at once to the study of

*Malarial Remittent.*—This is a fever of abrupt invasion, introduced usually by chill, severe headache, and backache. Nausea and bilious vomiting, pain through right hypochondrium, constipation, and scanty urine without albumen, are usually present. Remission occurs in twelve, twenty-four, or forty-eight hours, to be followed soon after by an exacerbation. In early summer, with appropriate treatment, this fever often terminates on the third day; as a rule, it subsides on the fifth day. In the fall, it is occasionally prolonged until the seventh, and in a very few instances I have seen it prolonged to the ninth day. Even without medical treatment, it shows a marked tendency to defervesce on the fifth day, and will often do so completely without the aid of quinia, under the influence of rest, liquid diet, and the cold-water treatment.

Practically, malarial remittent is a fever of five days' duration, and we may, as a rule, confidently predict its termination by that time, under judicious management, in an otherwise healthy subject.

Left entirely to itself, without care or medicine, this fever would probably assume a continued form, the secretions becoming greatly disordered, and the internal organs, chylopoietic viscera especially, being congested, and perhaps inflamed. Upon this point, however, I have no certain information, for the physician, on seeing for the first time a patient who had been long sick, would be perplexed to decide whether the case originally was one of malarial remittent or malarial continued. It would, indeed, be almost impossible to arrive at any conclusion.

CASE I. *Quotidian Remittent.* (Chart 1.)—J. R. E., æt. 21 years. Twenty grains of quinia given during each remission, beginning with the first. Defervescence on third day. Exacerbations occurred at 5 A. M. on first day, at 1 P. M. on second and third days.

At 6 P. M. on fourth and fifth days, there was so severe an attack of intercostal neuralgia, under the right breast, with inability to breathe in the recumbent position, as to necessitate hypodermic morphia. No elevation of temperature accompanied the neuralgic paroxysms. Quinia was given again on the fifth day.

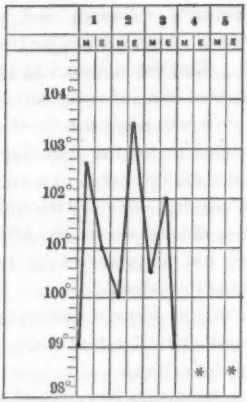
CASE II. *Quotidian Remittent.* (Chart 2.)—J. R. E., the same patient referred to in Case I. Taken sick three weeks after first attack. On fifth day, the temperature rose higher than on any previous day of his illness, though quinia to the extent of 20 grains was given during each remission, beginning with the first.

Defervescence occurred on fifth day. Exacerbations occurred at 4 A. M. on the first, 6 A. M. on the second and third, and 9 A. M. on the fourth and fifth days.

CASE III. *Quotidian Remittent.* (Chart 3.)—F. D., a girl, æt. fourteen years. Quinia was given at the height of the second exacerbation,

ten grains at 9, ten grains at 10, and ten grains at 11 A. M., *i. e.*, thirty grains in two hours. Again between midnight and daylight twenty grains. It was repeated to the extent of twenty grains during third and fourth remissions. The fifth exacerbation occurred as usual, and no quinia was given, but, notwithstanding, complete defervescence occurred abruptly.

Chart 1.




* *Neuralgia on 4th. & 5th. days.*

Chart 2.

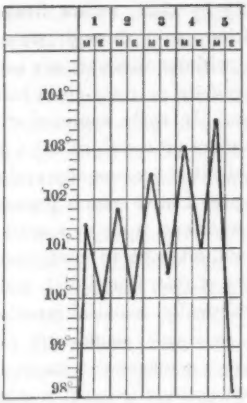



Chart 3.

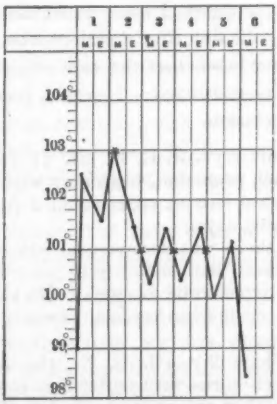
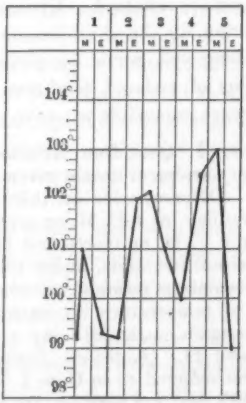



Chart 4.




CASE IV. *Double Tertian Remittent.* (Chart 4.) — E. P., æt. 16 years. First paroxysm at 7 A. M. Exacerbation at 2 P. M. on second day. Repeated on third day at 8 A. M.; on fourth day at 2 P. M.; on fifth day at 9 A. M., after which defervescence was complete. Quinia twenty-four grains was given during each remission.

CASE V. *Pernicious Remittent.* (Chart 5.) — H. M., male, æt. 11 years. Attacked 10th June. Invasion between midnight and daylight.

First visit was paid at 5 P. M. of that day. He was attacked very violently with fever, headache, backache, extreme restlessness, and uncontrollable vomiting, at first of bile and afterwards watery mucus. Irritability of stomach continued until subsidence of the fever on the fifth day, to such an extent, that even the smallest quantity of milk with lime-water was rejected. No perceptible remission occurred until the third day. Defervescence was sudden and complete on fifth day. No quinia was given, and no medicine of any kind, except three grains of calomel, which were administered before I saw him. This acted upon the bowels several times. The cold water treatment was vigorously and unremittingly used, by means of sponging the surface with iced whiskey, and compresses wrung out of ice-water, covering the front and back of the trunk. During this attack the pulse ranged from 120 to 150. Delirium was constant. Convalescence was rapid.

Chart 5.

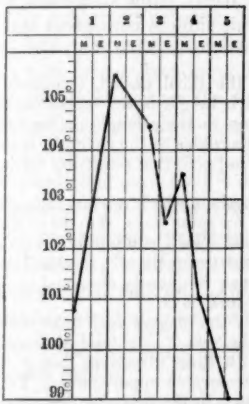
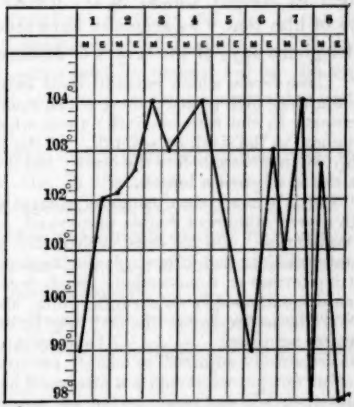



Chart 6.




CASE VI. *Quotidian Remittent of eight days' Duration.* (Chart 6.)—B. H., æt. 2 years, a delicate nervous girl. Nausea and great restlessness marked the invasion. Quinia eight grains was given at 12 M. on third day. This was in part rejected. Quinia sixteen grains was given by enema at 11 P. M. on the fourth, but was in part rejected. It was repeated with same result, on the fifth night. Soon afterwards, nine grains were given by the mouth and retained. At 11 P. M. on the sixth ten grains of quinia were given by mouth. The cold water treatment was used as in the last case.

Two features in this case should be noted: First, the complete intermission which occurred at the close of the fifth day, though quinia had been given so unsatisfactorily and ineffectively. Second, the abrupt termination of the fever at the close of the eighth day, the thermometer sinking at midnight to 96°, and the pulse falling to 80, being very feeble and irregular, and requiring the administration of brandy and broth, and the rubbing of the body with dry mustard. No medicine of any kind had been administered since 11 P. M. on sixth day.

These cases have been selected from my records, as illustrating the natural tendency of this fever, when aided by appropriate treatment, to terminate by crisis on the fifth day. I might multiply them without number, if it were necessary.

Such was the rule with the fevers of lower Mississippi. Such has been the rule with those of West Tennessee. Very rarely have I found them running to the seventh and ninth days. This fever affords a complete illustration of the ancient doctrine in regard to critical days. After having observed these features of remittent fever in Mississippi, I met with Cleghorn's little book on the "Epidemical Diseases of Minorca," as observed by him from 1744 to 1749, edited by Dr. Benjamin Rush, of Philadelphia, in 1809.

Dr. Elisha Bartlett, in his work on the "Fevers of the United States," edited by Alonzo Clark, M.D., quotes very freely from Cleghorn, and says of him that "he seems to have studied this subject with great care."

Cleghorn says of the fevers of Minorca—

"Those fevers which come to their height in the third period, terminate in the fourth or fifth period; those which come to their height in the fourth period, terminate in the fifth or sixth; those which come to their height in the fifth, terminate in the sixth or seventh. If the fever increases to the seventh, it probably will not cease before the ninth; but it rarely happens that remitting tertians run out to so great a length.

"But it is much more common to meet with tertians which set out furiously, with severe subintrant double paroxysms, so that for some days, they have little or no interval. On the third or fifth day, a profuse sweat commonly brings on an intermission, and afterwards the disease assumes the type of a double intermitting tertian or semi-tertian. Such fevers I have frequently observed to terminate spontaneously on seventh, ninth, and eleventh days.

"If the paroxysm on the fifth day be evidently the longest and most severe that has happened . . . I have recourse to the bark . . and the assistants are strictly enjoined to comply punctually with these directions, lest if this interval escape, we should not afterward have a favourable opportunity. Yet it is not always in our power to put an immediate stop to the fever by this means. On the contrary, do what we can, it will often proceed in its career, and, in spite of all our attempts, run obstinately on to the seventh or ninth day."

These are the observations of a careful and accurate observer, made before the days of quinia and cold-water treatment, when the physician's main reliance was in the use of evacuant medicines, and bark tardily administered.

Prof. W. C. McLean of the Army Medical School at Netley, who wrote the article on Remittent Fever for Reynolds's "System of Medicine," after an extensive experience in India, says—

"As soon as the second remission appears, quinine must be given as before, and continued until full saturation of the system is evidenced by cinchonism. So soon as this state is brought about, in a vast majority of instances, the exacerbations will become milder and terminate in a copious sweat, and the patient will enter on a state of convalescence."

Leaving us to infer that defervescence will occur in a few days, he further adds, that this fever has a duration of from five to fourteen days, and that

like all forms of miasmatic fevers its duration is much affected by treatment, and the action of antiperiodic remedies. Dr. McLean clearly indicates in his article, that this is a fever of short duration, and one which he expects to terminate, in all its forms, quite speedily by the vigorous use of antiperiodics, no matter at what period in its course he is called to see it.

Dr. Aitken ("Science and Practice of Medicine"), whose material is also gathered from Indian observations, states that—

"when the disease does not terminate fatally, amendment is generally observed after the fifth exacerbation, which may subside in very copious perspiration." And again, while discussing treatment, "by these measures the daily decline of the disease is seen, and consequently there is a daily diminishing occasion for the use of active measures of cure, till towards the fifth, sixth, or ninth day, convalescence is established."

In view of the observations here presented, it would then seem eminently proper, in defining bilious remittent fever, to say that it is a disease having a natural tendency to defervescence on or about the fifth day; that with proper treatment it can sometimes be terminated on the third day, nearly always on the fifth day, and only in exceptional cases will it last until the seventh or ninth day.

The great importance of recognizing such a definition clinically is, that the physician may have a definite aim in treatment, which I submit he can scarcely have if the description quoted from Dr. Wood is correct.

I now approach the study of another and entirely distinct form of fever, due likewise, in all probability, to the influence of the malarial poison, whatever that may be. This has been called—

*Malarial Continued.*—All the writers with whom I am acquainted seem to regard this fever as a form of bilious remittent. Thus Dr. Elisha Bartlett says—

"In the warmer malarious regions, and during the prevalence of the graver forms of periodical fever, the bilious remittent variety, especially, frequently loses to a great extent its periodical or remittent character, and assumes more or less entirely a continued form."

Cases of this kind are by others referred to as "neglected remittents," and as "remittents with adynamic tendencies;" and for several years past, as far as I can learn, this is the form of fever denominated in the mortality reports of this city "typho-malarial."

Its invasion, instead of being abrupt, as is the case with remittent, is sometimes marked by prodromes. In many cases, the patient has been ailing for a week before going to bed. In other instances he will have had a repetition of chills for two or more weeks, at irregular intervals, when finally the fever which follows the chill assumes a continued form, and goes on rising gradually, day by day, until on the sixth or seventh day, when the temperature has reached 103½° or 104°. In other cases there are no premonitory symptoms. The patient is attacked in the

midst of apparent health, without appreciable cause, having had no previous manifestation of malaria.

This fever presents a stadium of increase of about one week, a stadium of height of five or six days, and a stadium of decrease, which terminates completely on the twenty-first day.

Its thermometric range is decidedly lower than that of typhoid. It seldom goes above 103⅘°. Vomiting of bile is quite a common symptom during the first days of the attack. Bronchial catarrh is generally present. Constipation and a concave abdomen are marked features.

Appreciable splenic tenderness or enlargement has been so rare in my observation, that from memory I can recall but two cases in fifteen years.

All the essential features of typhoid or enteric fever are absent. There is no diarrhœa, no ileo-cæcal tenderness or gurgling, no meteorism, no eruption of rose-coloured spots. As a rule, there is entire absence of abdominal symptoms.

In some instances where the patient's previous condition was bad, perhaps the system undermined by malaria, and where he was unfavourably situated for treatment, or had had no treatment, I have seen diarrhœa, dry, red, and shining tongue, sordes and low delirium with picking at the bedclothes, and a condition closely resembling typhoid.

There were a few such cases among the soldiers of the 28th Miss. Reg't Cavalry, encamped in the Mississippi bottom in the summer of 1862. Their health had been shattered by repeated attacks of intermittent and remittent fevers; and they were located where there were lacking all the essentials for the proper treatment of continued fever, but where there was no suspicion of the existence of the poison of genuine typhoid.

In quite a large proportion of the cases of this fever, a prominent feature is neuralgia. It will come on about mid-day, and continue until after midnight; and in some instances so severely, as to demand the hypodermic use of morphia. In one case, the pain will be supra-orbital, and extend to the side of the face, neck, and shoulder. In another, the neuralgia attacks the intercostal nerves of one or both sides so severely, that there is dyspnœa from inability to expand the chest. In a third, I have seen this pain localized in the right side, over the region of the ascending colon, extending therefrom upwards into the chest and downwards to the hip. In a fourth, it is in the abdomen. These neuralgias are periodical, coming on in the forenoon, increasing in severity during the afternoon, and disappearing about midnight. They constitute a very troublesome and distressing feature in many of the cases of malarial continued. The following records will serve to illustrate the fever under discussion.

CASE VII. *Malarial Continued Fever.* (Chart 7.)—Mrs. ——, æt. 35 years, a delicate lady, after suffering from prodromata went to bed with fever on 12th of May. That night, between midnight and daylight, twenty-eight grains of quinia were given; and the second night, at the same hours

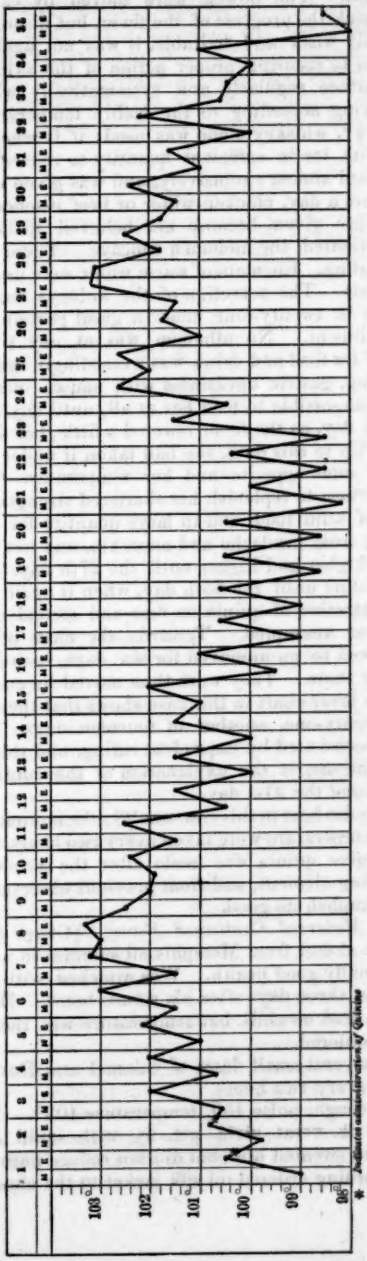



Chart 7.

twenty-four grains. The bowels were moved by castor oil. As the quinia did not check the progress of the fever, but disordered the stomach, which was already weak and irritable, it was not again repeated. Attention was given to securing proper action of the skin and kidneys, by sponging the surface regularly and systematically with whiskey at a temperature varying according to the bodily temperature. If this did not go above 101½°, whiskey alone was used; if it reached or rose above 102°, whiskey with ice in sufficient quantity to reduce it. As to food, buttermilk was used almost exclusively, and was given every three hours. Two or three times a day, chicken-water or beef essence was substituted. No stimulants were given, because not believed to be required. The bowels were constipated, the abdomen concave. There was no ileo-cæcal tenderness or gurgling. Enemata of warm water were used every few days, to move the bowels. The secretion of the kidneys was very scant, only about six ounces in twenty-four hours a great portion of the time. It contained no sediment. No albumen was at any time found. The patient's capacity for food and drink was exceedingly small. As the fever rose in the evening, gastric uneasiness with nausea increased; and after 10 P. M., it was impossible to feed her at all, until daylight came again.

About the 16th day, as the fever lowered a little, her willingness to take food increased. Up to this date, she had taken it under protest. By the 21st day she had some appetite, and her temperature fell to 98° on this day. In her eagerness to replenish her shattered strength, she, on the 22d, imprudently ate of solid food, and in large quantity for her. She began to suffer after this from headache and anorexia, and next day the temperature rose, going higher and higher until the 27th day. From this, there was a gradual decline until the 35th day, when it again became natural. After the administration of quinia on first and second days of the fever, no medication was attempted. Towards the close of the attack, the bowels were allowed to go unmoved for six days, because no discomfort was occasioned by them. They were then moved by enema.

A glance at the fever chart in this case shows that there were really two fevers, one of twenty-one, another of fourteen days. The second was clearly a relapse occasioned by imprudent eating, and this, I am sure from multiplied observations, is the explanation of the continuance of many of these cases beyond the 21st day.

The maximum pulse beat in this case was 98; the minimum 84 per minute. Observations of temperature were taken every two hours during the attack.

No attempt to give quinia was made after the second day, because it acted as a disturbing element, and from previous observations I was satisfied it would accomplish no good.

CASE VIII. *Malarial Continued Fever.* (Chart 8.)—H. P., æt. 5 years, had been absent from Memphis all summer in a healthy country. Returned in unusually good health. Was attacked with fever on evening of Nov. 27th, about three days after his return home. He was seen by me at midnight; had had no chill, but temperature was then 100°. A dose of castor oil was ordered.

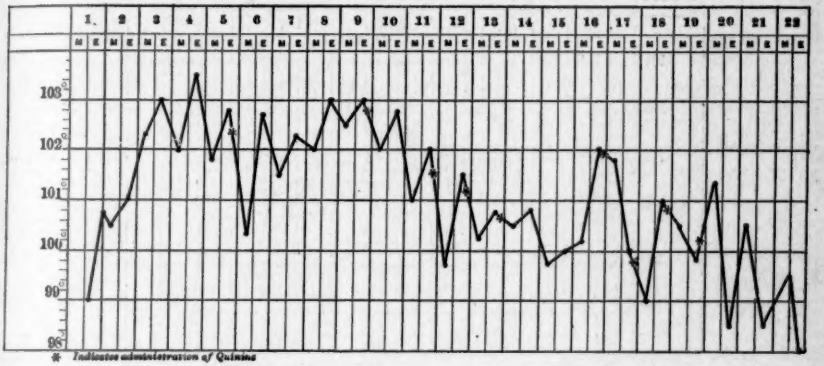
*2d day.* Gave several small doses of calomel and Dover's powder, and tr. aconit. gtt. ij, every two hours.

*3d day.* Much cough, pulse 150, temperature 103°. Discontinued the aconite and gave tr. verat. virid. gtt. iij, with squill every two hours. This nauseated and sweated him, but did not reduce pulse or temperature.

*4th day.* In morning ordered oil silk jacket to the chest, because cough

was troublesome, and pulmonary inflammation was feared. The temperature reached 103½° early in the afternoon, the jacket was in consequence removed, and sponging with iced whiskey used instead. This sponging was made use of on the fifth, sixth, seventh, and eighth days every hour or two, whenever the temperature rose above 102°. But for this treatment it was evident that the thermometer would have gone higher than indicated by the chart.

Chart 8.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103°
102°
101°
100°
99°
98°
* Indicates administration of Quinine

On *5th day*, at 8 P. M. ten grs. quinia and four drops of liquid Dover's powder were given in one dose. This was repeated at same hour daily, from the ninth to the nineteenth day. During this fever, every function was to all appearance well performed.

The bowels acted spontaneously most of the time. Oil was required twice; occasionally an enema. The kidneys acted freely and regularly, and the urine appeared natural and was free from albumen. The tongue was soft and moist with a light white fur. Bronchial irritation was troublesome, but repeated examination proved the absence of pulmonary inflammation. The cough was harassing in proportion as the temperature rose, and was always lessened by the application of iced compresses to the chest and abdomen.

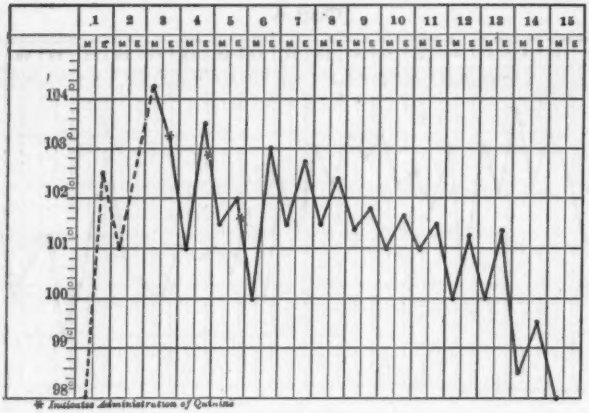
Diet was exclusively milk and lime-water, given every two hours during the day, and three hours at night. Sponging was used hourly when the temperature was above 102°.

There were no abdominal or brain symptoms and no eruption. There was no indication of a local lesion.

CASE IX. *Malarial Continued Fever.* (Chart 9.)—H. H., an active man, æt. 30 years. Had not felt well for several weeks; was taken with fever on evening of 25th November; had fever all next day and night, and came to my office in forenoon of 27th November, where I found his temperature 104½°—probably raised by exercise, as he had been attending to business for several hours before. Between noon and midnight he took thirty-two grains of quinia, and on morning of 28th of November his temperature was 101°. At 6 P. M. it rose to 103½°. At midnight he took twenty-four grains of quinia, which was repeated next night at same hour.

As he suffered greatly from muscular pains in cervical spinal region and in the arms and chest, so that it was painful to take a satisfactory inspiration, ten grains of quinia daily were given about 8 A. M. for several days, and with marked relief. These pains, which were regarded as spinal symptoms, increased with the rise of fever in the afternoon. No calomel was given. Castor oil was used at first, and on two subsequent occasions the

Chart 9.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105
104
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101
100
99
98
* Indicates Administration of Quinine

bowels were moved with citrate of magnesia. His diet was milk or buttermilk. Urine nearly normal; no albumen. Complete defervescence occurred on fourteenth day, when the temperature was 98½° in morning and 99½° in evening. The pulse ranged from 74 to 96. The cold-water treatment was systematically used.

*Remarks.*—I am well satisfied that this fever is not the result of neglected remittents, as some have intimated. It begins, continues, and ends as a continued fever. Its duration is in no way affected by the exhibition of antiperiodic remedies.

The "status typhosus" is not one of its characteristics; when it occurs, it is exceptional, and is due to the operation of causes extraneous. The abdominal symptoms are absent, hence there would seem to be no relationship to typhoid.

While typhus is purely contagious, and typhoid is a miasmatic contagious disease (Liebermeister), this fever is neither, but has a different etiology.

I must here refer to two cases of this fever in which grave cerebro-spinal symptoms supervened upon crisis, a circumstance which has been noted in the other forms of continued fever.

In one of these, a boy of 12 years, whose attack had been of very moderate severity, complete defervescence occurred on the 21st day. On the evening of the 22d day, there was a convulsion followed by stupor. The next day another convulsion, with hemiplegia. Stupor continued, and death occurred on the 5th day.

The second case was that of a boy of 14 years. Fever left him on 21st day. At night there supervened paralysis of the left arm and leg, but the cerebral functions were not disturbed. In a few weeks these symptoms disappeared, and convalescence progressed favourably; but within a year true epilepsy appeared, and has continued to the present time, after the lapse of ten years.

The supervention of cerebro-spinal lesions as immediate consequences of crisis in typhus and typhoid fevers, is discussed by Hudson in his work on "Fevers."

I regret that, in the fatal cases of malarial continued fever which have occurred in my practice, it has been impossible to obtain an autopsy. A better knowledge of its pathology is much to be desired.

Though familiar with typhoid fever from my service in the wards of Bellevue Hospital, under the guidance and teaching of Drs. Clark, Metcalfe, and McCready, I have never recognized it in this valley until the past summer; and this observation is in accordance with the oft-expressed views of medical acquaintances, if I except an occasional case clearly due to importation.

In June last, a boy of 6 years was under my care for what I considered typhoid fever. He recovered, the fever having lasted twenty-nine days.

A second case occurred soon after, having no connection with the first. This patient, a young woman 26 years of age, had lived some years in Hickman, Ky., and having chills there, had acquired a large spleen. She was in good health when attacked in Memphis, where she had been living for more than a year. She had fever eighty-one days, and died on the ninety-second day of her illness. The case was carefully studied, and records of temperature and pulse kept throughout. The features most prominent in her history were fever, bronchitis, greatly enlarged, very tender, painful and hard spleen, diarrhœa, and swollen belly. There was no eruption, no intestinal hemorrhage. Death from exhaustion.

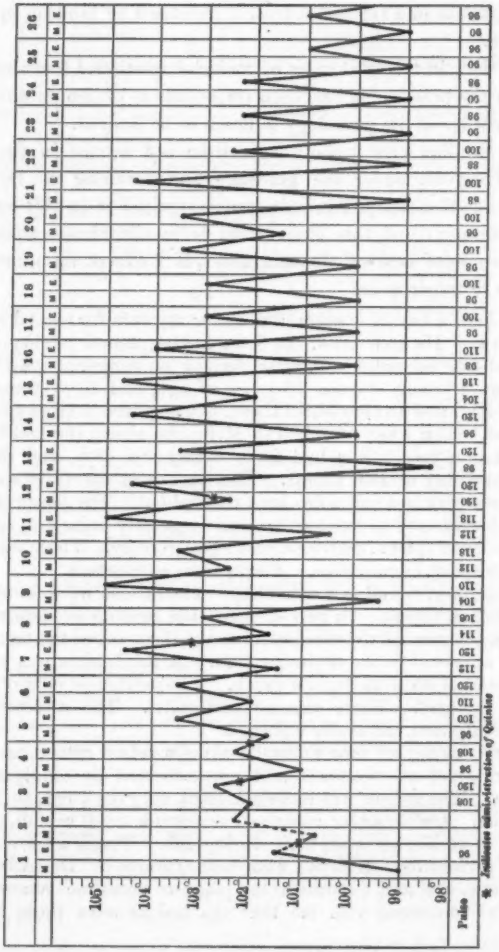
At the autopsy, round and oval-shaped ulcerations were found in lower part of small intestine. In two of these the healing process was clearly established, for around the circumference of these ulcers the mucous membrane was adherent to the muscular coat. A third ulcer was situated on the upper end of an oval Peyer's patch. The peritoneal coat of the ileum was much injected. There was no peritonitis. The mesenteric glands were decidedly and uniformly enlarged.

The liver was denser than normal; was of a yellow colour, rather larger than natural, had no abscesses, and was adherent by old lymph to the diaphragm. The spleen was enlarged, hard, very dark red, with no purulent deposits. Gall-bladder contained seventeen small calculi, which had given rise to no known symptoms during life. There were evidences of old pelvic peritonitis. Kidneys were not examined. Dr. Albert Sessel, of New York, saw and examined the piece of intestine removed at the autopsy, and concurred with me that the lesions were those of typhoid fever.

This case established the fact that typhoid fever existed here. Other cases soon appeared, and one of these is presented to show how regularly typhoid may pursue its course, undisturbed though surrounded by malaria,

CASE X. *Typhoid Fever.* (Chart 10.)—Miss ——, æt. 29 years, a resident of Paducah, went to bed on the 22d September. She had spent the month of July at Gibson's Wells, in West Tennessee, and came from there to Memphis on 15th August. The records of temperature were taken every two hours, night and day; of respiration and pulse night and morning. The accompanying chart records the maximum and minimum

Chart 10.




temperature daily, and not simply morning and evening temperatures. The fall of temperature on ninth day was probably due to action of calomel given the night before and that morning, in doses of six grains, aided by the

influence of quinia given, in a single dose of twenty-four grains, on the night of the seventh day.

The great fall of temperature on the thirteenth day seemed due to salicylate of soda, fifteen grains every two hours during the day, from 10 A. M. to 10 P. M.; in all one hundred and five grains.

During the entire course of the disease, the temperature day and night was controlled by sponging with ice-water, or the application of cold compresses, whenever the thermometer reached 102° or over. There were present mental weakness and dulness, deafness, and quiet delirium, and during the first week, severe headache; moderate but marked and persistent diarrhœa, with involuntary discharges from the bowels; tympanites, gurgling, and great tenderness on pressure over the ileo-cæcal region.

The urine in the beginning was scant and high-coloured, but increased under the free use of Apollinaris water. During the second week the use of the catheter was necessary. At the close of the second week the urine was albuminous, with a specific gravity of 1020. Under the microscope, there were numerous renal cells, the nucleus in some distinct, but in others not visible, the cells being filled with yellow granular matter. There were also cylindrical masses of granular matter. No tube casts. After twenty-first day, for two weeks, there was deposit of urates on standing. Although, as indicated by the chart, this fever ran its course practically by the twenty-eighth day, and convalescence was entered upon, the temperature was daily above the normal, until November 1st, when the patient was allowed to sit up for the first time.

*Typho-malarial Fever.*—Of late years the term typho-malarial has quite frequently appeared in our mortality reports, but I think for the most part without scientific propriety.

This term has been applied generally, by our physicians, to all the cases of continued fever, because they were recognized as not being typhoid, and were not looked upon as remittents. There was, indeed, no other name in the current medical nomenclature to apply to them, with any semblance of propriety. These cases I have always designated as malarial continued. As regards the term *typho-malarial*, I see no objection to its use, provided it is applied as its originator proposed.

From communications in the journals, it would appear that much confusion exists in the mind of writers, as to the correct meaning of this term. By many it is used to designate a fever which they regard as malarial, but in which the patient has lapsed into a typhoid state—the so-called remittents with adynamic tendencies—though there exist none of the abdominal features of enteric fever.

Some perhaps regard this term as applicable to a special type of fever. Others of my acquaintance are quite at a loss as to the meaning of the term, and doubt its applicability to any form of fever.

At the meeting of the International Medical Congress, in Philadelphia, in 1876, Dr. J. J. Woodward presented a paper entitled "Typho-malarial Fever: is it a special type of fever?" He declared that the term typho-malarial was proposed, not to represent a specific type of fever, but "to

designate all the many-faced brood of hybrid forms resulting from the combined influences of the causes of malarial fever and enteric fever."

The Section on Medicine adopted this conclusion: "Typho-malarial fever is not a special or distinct type of disease, but the term may conveniently be applied to the compound forms of fever, which result from the combined influence of the causes of the malarial fevers, and of typhoid fever."

Having this for our authority, it may be declared that, before applying the term typho-malarial to any given case of fever, we must have satisfactory evidence of the operation of two causes, one which gives rise to malarial fevers, the other which produces typhoid or enteric fever.

Inasmuch as we do not look for specific pathological lesions in malarial fevers, our main reliance in the diagnosis of them must be in their thermometric range, and the study of this range has been one of the chief objects of the present paper.

All the world agrees that there is no reliable evidence of the operation of the typhoid poison, except inflammation, with enlargement and ulceration of the solitary and agminated glands of the small intestine, and enlargement of the mesenteric glands. The full requirements, therefore, for a diagnosis of typho-malarial fever are a thermometric range presenting the combined peculiarities of the malarial fevers and of typhoid fever, together with the gastric and hepatic symptoms of the former, and the intestinal lesions of the latter.

I have read Dr. Woodward's paper with profound respect, and I admire the fairness and the scientific accuracy which he has displayed in the discussion of this interesting subject. In this paper before the International Congress, he declares that the fevers observed in the Federal Army, to which he proposed to apply the term typho-malarial, were divisible into two groups. In the first group the type resembled very closely ordinary typhoid fever. The cases began, continued, and ended like typhoid, and at death presented the characteristic lesions of the patches of Peyer. But in many respects they were unlike typhoid. The thermometric range was different. The daily evening exacerbations observed in typhoid were exaggerated, and often assumed a tertian or double tertian type.

In the beginning of the attack it was common to find the gastric and hepatic disturbances so characteristic of remittent fever; and in convalescence the ordinary ague paroxysms often appeared. In the second group—

"in which the malarial phenomena predominated, the disease began as a simple intermittent or remittent fever of quotidian, tertian, or quartan type, the most frequent form being a simple or double tertian; but after a week or ten days, the fever assumed a more or less completely continued type, with many of the phenomena characteristic of typhoid fever, such as diarrhœa, abdominal tenderness, meteorism, muttering delirium, dry, brown tongue, and the like. But even when the typhoid phenomena were most pronounced, some of the most characteristic of them were often wanting. Thus sometimes there was no diar-

rhœa at all but constipation instead. The rose-coloured eruption was generally entirely absent; gastric disturbance, hepatic tenderness, and an icteroid hue of countenance were more generally present than in simple typhoid fever.'

The pathological lesions to which we must now look for deciding the true nature of the cases constituting this group, will be conveniently classed under two heads.

Dr. Woodward says—

"I have collected a number of autopsies of cases of this kind, in which diarrhœa had been present during the fever, and in which after it had assumed a continuous type, it had strikingly resembled typhoid fever, but in which dissection showed no other lesion in the alimentary canal than a smart intestinal catarrh."

These cases do not come up to the requirements laid down by us, and I would say therefore were clearly not typho-malarial, for there is no evidence whatever of the operation of the typhoid poison in them. They were, to my mind, probably cases of malarial fever of the continued form, in which the patient lapsed into a typhoid condition, as he might have done in erysipelas, dysentery, puerperal peritonitis, or other disease.

But mark well, the lesions found in most of the cases of this group were—

"patches of inflammation scattered irregularly throughout both small and large intestines, and enlargement of the closed glands. The solitary glands of the small intestine appeared as projecting tumours the size of pin-heads, which often had constricted necks so that they resembled tiny polypi. The agminated glands of Peyer, slightly prominent, were often the seat of pigment deposit, which gave them the so-called shaven-beard appearance.

"Between the simple inflammatory enlargement of the closed glands, which I have pictured, and the more luxuriant process which occurs in ordinary typhoid, and which most pathologists believe to be specific, every possible transition existed.

"I, for one, confess myself unable to draw a line between the two conditions. Anatomically, they appear to pass into each other by insensible gradations. The sloughing and ulceration of the so-called typhous process is, I think, sufficiently well explained by the intensity of the process, and the nutritive disturbances which thence result, without conjuring up in our imagination an undemonstrated specific something to account for it."

This view seems to me entirely correct. These cases were properly designated typho-malarial.

The so-called typhous process is now recognized by other pathologists besides Dr. Woodward, as simply an acute inflammation, devoid of specificity, of the solitary and agminate glands of the small intestine, and of the glands of the mesentery.

The matter with which these glands are big is composed of cells, white blood-corpuscles which, according to Cohnheim's view of the inflammatory process, have migrated from the small veins; and others resulting from proliferation of the peculiar cells which constitute the parenchyma of the glands. For a full account of the histological changes in the inflamed intestines I refer to "Med. and Surg. Hist. of the War of the Rebellion," Med. Vol. Part Second; to Dr. John Harley's article on Typhoid Fever in Reynolds's "System of Medicine;" and to Liebermeister's article in Ziems-

sen's "Cyclopædia." According to Dr. Harley's observations which were made in King's College and the London Fever Hospital, in rare cases of typhoid the solitary glands alone are affected. In the extensive autopsical investigations made at Basle, by Hoffman, in conjunction with Liebermeister, it was established that in some of the cases the pathological processes did not go beyond the stage of simple swelling of the solitary and Peyer's glands. There was no ulceration or loss of tissue. The patches and follicles returned to their normal condition through the influence of degeneration and absorption. Numerous little ecchymoses were found, oftentimes producing a punctate pigmentation of the swollen patches—the shaven-beard appearance of Woodward. (Ziemssen's "Cyclopædia," vol. i. p. 102.) Hoffman found that the glandular enlargement was "produced essentially by an excessive development and multiplication of the cellular elements."

This hybrid disease which Dr. Woodward has brought so graphically before us is, however, not a new one. He himself has shown that it was the scourge which, under the names of Hungarian Fever and Walcheren Fever, decimated the armies of Europe, during the sixteenth and eighteenth centuries. Trousseau, the great clinical teacher of the Hôtel Dieu, has graphically described one of these compound forms of fever, and tells us that "it is particularly in districts where marsh fevers are endemic, and in persons who have not long been absent from such localities, that we see them." Among the ancients who observed and drew clinical pictures of the forms of disease we are discussing, were (I quote from Trousseau) Sydenham, Morton, Huxham, Van Swieten, and Stoll. Dr. Drake, in the "Diseases of the Interior Valley," has given an account of these hybrids, and proposed to designate them by the term remitto-typhous; and Professor Dickson of Philadelphia clearly recognized them, so that there can be no doubt of their entity, or of the truth of the clinical picture which has been presented to you.

What can possibly be more explicit than this from Bartlett, p. 133:—

"Typhoid fever, like all other continued affections, is sometimes more or less mixed up with and influenced by the pathological element of periodicity. Dr. Wooten, of Lowndesboro, Alabama, in a letter to me, says: I may remark that I have often seen typhoid fever complicated with regular remittence—that is typhoid fever and remittent fever existing together; and I have cured the paroxysmal exacerbations whilst the disease essential to typhoid continued; and I have frequently found it necessary to do this before the more formidable disease could be influenced by remedies."

In regard to the general question of hybridity as applied to diseases, there can at this day be no doubt. The disease called by the Germans, Rötheln, is clearly a compound resulting from the poisons of scarlatina and measles. The poisons of typhus and typhoid occasionally combine to give us another hybrid.

"It cannot be questioned that cases of fever are met with from time to time, though unfrequently, in which the phenomena of both forms of disease are pre-

sent in the individual. In a paper on the coexistence of several morbid poisons, in the 24th vol. *Medico-Chirurgical Review*, Dr. Murchison gives several most illustrative cases of this hybrid disease."

Sir D. Corrigan gives an admirable example in the tenth lecture of his work on Fever. (Hudson on "Fever," p. 65.)

Thirdly, the existence of a hybrid between typhoid and malarial has been conclusively settled by Dr. Woodward's researches. But although such forms of disease exist, it should be remembered that, in civil practice at least, they are very rare.

Thus Hudson says of the compound of typhus and typhoid, "that while the occasional occurrence of a hybrid disease is unquestioned, this is so infrequent and exceptional as really to prove the rule." And Dr. Woodward remarks, "that, whenever an army, recruited in a comparatively non-malarial region, campaigns on a malarial soil, such hybrid forms will appear; and that, sporadically, such cases will appear in civil practice in miasmatic regions."

Appealing to my own observation, I can furnish but a single case of typho-malarial, and, as this was studied with care, its history and thermometric range are herewith presented as illustrating all the clinical points in a typical case.

CASE XI. *Typho-Malarial Fever.* (Chart 11.)—Mrs. B., æt. 25 years, was attacked, October 2d, with fever introduced by chill, and accompanied with nausea, and vomiting of bile, and diarrhœa. Bilious vomiting and purging continued to such an extent that morphia, hypodermically, was required to control it. As the stomach was still very irritable, on 5th October an attempt was made to administer quinia by the rectum, but after three injections it was abandoned, because it was not retained.

On the fifth day of her illness, the fever having continued with regular evening exacerbations and morning remissions, almost complete defervescence occurred, and I believed, then, my diagnosis of bilious remittent confirmed.

On the sixth and seventh days she was comfortable, and the temperature did not go above 99½°; but, on the evening of the seventh, though she had kept her bed, and had taken nothing but liquid food, and had been guilty of no imprudence, the temperature rose, and vomiting of bile and diarrhœa returned.

On the eighth day the temperature rose still higher, and on the ninth it reached 104°. It did not go much below this until the twelfth, which was five days since the reaccession of fever. On that day an abrupt fall to 100½° occurred, without assignable cause. From this it again rose, pursued a comparatively continuous course for several days, and then went on in the zigzag lines which are observed during the last days of typhoid.

In this history we observe the gastric and hepatic symptoms of bilious remittent; and a thermometric range which presents, first, the typical features of a bilious remittent terminating on the fifth day; a lull; and then another curve, marked by tendency to subside on the fifth day also, and finally the range of typhoid fever; covering in all twenty-eight days.

In addition to these features well-marked typhoid symptoms made their appearance early. There were deafness and dulness of mind, with the typhoid facies: great dryness of the mouth, throat, and nares, and fre-

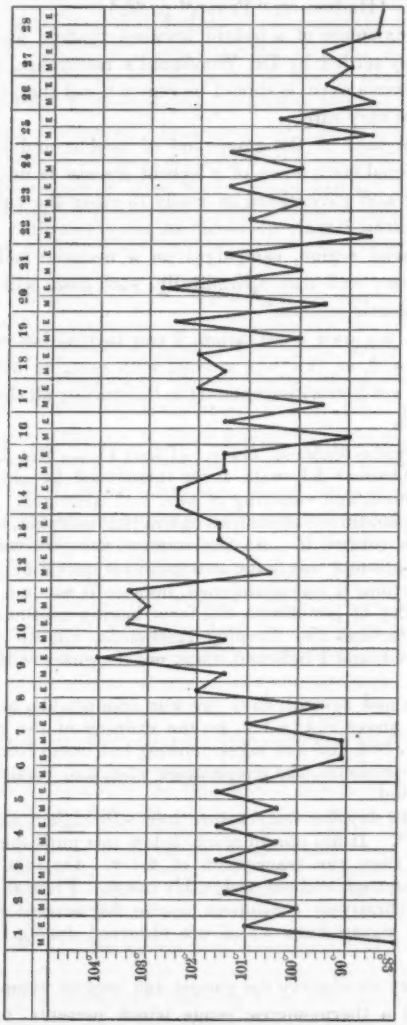


Chart 11.

quent epistaxis; a rapid feeble pulse demanding stimulants, which is an exceedingly rare occurrence in malarial continued fever, in my observation. The pulse ranged from 110 to 130 per minute. There were meteor-

ism, ileo-cæcal tenderness and gurgling, troublesome diarrhœa, and a copious eruption of rose-coloured lenticular spots over the abdomen.

The rose-coloured spots were observed for the first time on the thirteenth day of fever, about twenty in number; they came out in successive crops until the approach of convalescence.

On the eighteenth day of fever the urine was slightly albuminous, and continued so for several days. Bronchial cough was a troublesome symptom. Fever left her on the twenty-eighth day, and convalescence was uninterrupted.

After the trial with quinia no medicine of any kind was administered, except occasionally a very small dose of morphia, hypodermically, at night, to allay restlessness and procure sleep.

I have said that this is the only case of typho-malarial which has come under my observation. It is certainly the only one I have recognized.

It should be remembered, however, that my field of observation has been one in which the typhoid poison has not been operative, to any marked extent, until within the past year. In the future it is possible that the blending of the two types may be more frequently observed here; but my impression is, that typho-malarial fever will possess its chief interest for the military surgeon, and will be seen, to a limited extent only, in civil practice.

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## ARTICLE X.

### A STUDY OF NON-MALIGNANT ULCERATION OF THE RECTUM AND ANUS.

By CHARLES B. KELSEY, M.D., Surgeon to the Infirmary for Diseases of the Rectum, New York, etc.

THE many different varieties of non-malignant ulcers which are met with at the anus and within the rectum, may best be classified from the standpoint of etiology; and for the sake of simplicity we shall divide them into the simple, tubercular, scrofulous, dysenteric, venereal, those due to stricture, and those due to the gangrene following the severe fevers.

I. *Simple Ulcers.*—These are almost always of traumatic origin, and the most frequent traumatism to which the rectum is subject is perhaps that arising from the presence and passage of hard masses of feces. From this cause alone, or combined with their extrusion from the anus, the surface of projecting hemorrhoidal tumours may become ulcerated for a considerable extent; and by this means a fissure is often produced within the grasp of the sphincter. The latter I have known to happen on the first evacuation after an operation for hemorrhoids (the bowels having been confined for several days), rendering necessary the usual operation for its cure. Another frequent cause of direct injury is the presence of foreign bodies—either fish-bones, date-stones, etc., which have been swallowed; or larger substances which have been intentionally introduced per anum. In the removal of such substances fatal injury may be done by laceration; or

their presence may have already excited extensive ulceration which will lead to subsequent stricture. In the removal of glass bottles, cups, etc., the greatest care and gentleness are necessary to avoid breakage, and a laparotomy may often be preferable at the outset, as offering less risk to the patient than a prolonged and perhaps in the end unsuccessful attempt at extraction with the forceps. And just here I will stop to say that the existence of a soda-water bottle or a chocolate-cup in the human rectum is *prima facie* evidence of an evil habit on the part of the bearer. The explanations given of their presence are as various as those used to account for the hair-pins, etc., which are found in the female bladder and vagina, and they mean very much the same.

An infrequent cause of direct violence to the rectum and of subsequent ulceration due to the direct injury, and independent of any venereal disease, is sodomy either attempted or accomplished. Burgeon[1] describes the rectum of an idiot who for a considerable time had practised this vice as much dilated and infundibuliform in shape, the mucous membrane as blackish, swollen, and ulcerated at points, and the muscular and submucous layers as hypertrophied to four or five lines in thickness. It is doubtful whether pederasty should be included among the causes of stricture, as the injury done generally does not reach this extent; and indeed the anus is not often dilated to any such extent as in this case. Ligg[2] describes a deaf-mute 35 or 40 years of age, the victim of this habit, whose anus offered no trace of traumatism, and was well closed, being marked only by the absence of the radiating folds. The mucous membrane was normal. This absence of the radiating folds, together with the presence of spermatozoa in the rectum or in the mucous discharge from it, are given as the best medico-legal proofs of the vice. The only sodomists it has ever been my fortune to meet have been negroes, and of these I have seen several.

An injury to which women alone are subject, and which is believed by many to go far towards accounting for the greater frequency of ulceration and stricture in them than in men, is bruising of the rectal wall between the head of the fœtus and the sacrum in parturition. Van Buren[3] relates such a case from his own experience, and most of the other standard authors agree with him.

An ulcer of the rectum is a not infrequent result of surgical interference with diseases of the part. Although in certain subjects a wound made by the surgeon may refuse to heal under the best of treatment, I have more frequently seen ulceration from this cause as a result of careless or ignorant manipulation, than of the unfortunate constitutional state of the patient. Two cases occur to me now, one of a large ulcer with hard and

[1] Bull. de la Soc. Anat., 1830, p. 80.
[2] Corr. Bl. f. schweiz. aerzte., No. 3, p. 71, Feb. 1, 1879.
[3] Arch. of Med., December, 1879.

elevated edges looking much like a true chancre, which resulted from the persistent application of caustics to a simple fissure; and another of three separate ulcers which marked the former site of three internal hemorrhoids which had been removed by ligatures. The patient suffered only slight discomfort from the operation, and was allowed to go to his business on the following day, a thing which may sometimes be done with apparent impunity, but which should never be countenanced by the operator. It is this danger of ulceration which stands in the way of the general adoption of carbolic acid injections in the treatment of hemorrhoids.[1]

The application of nitric acid to prolapse is said to have been followed by disastrous ulceration and stricture, but such need not be the case; nor is any such use of the acid necessary to effect a cure in any case where its use is indicated at all. Prolapse is not, however, a rare cause of stricture, due to the strangulation and sloughing of the prolapsed part, and to the subsequent cicatrization.

An injury due to any of the causes we have mentioned may in certain persons, and when located at the verge of the anus, assume the characteristics of an affection which has been elevated into a separate class and is known as fissure or irritable ulcer. The irritable ulcer differs in no respect from other simple ulcers in the same locality except in the fact of its irritability. It would require a special article to deal thoroughly with all the questions which have arisen in regard to this affection, and we can only call attention to two chief theories concerning it. According to Boyer[2] the spasm of the sphincter is the foundation of the trouble and the fissure is a secondary lesion due to the passage of feces through the spasmodically contracted anus. Trousseau,[3] on the other hand, reverses the relation, and believes that the fissure exists first, and that the pain and spasm are reflex, being specially apt to occur in persons of neuralgic tendency, and being in many cases merely the local manifestation of a general nervous state. The only point we wish to emphasize is that there is nothing peculiar in the ulcerative action of the painful fissure; and that any fissure may become an irritable one, or may remain for years causing little suffering. For this reason Gosselin[4] has divided them into two distinct varieties, the tolerant and intolerant—a classification which Mollière[5] still further improves by suggesting the words tolerable and intolerable.

An eruption of herpes around the anus similar to what is seen on the lips may result after rupture of the primary vesicles in numerous small superficial ulcers of a reddish colour and secreting very little pus. These

[1] Matthews, Objections to the use of Carbolic Acid in the Treatment of Piles. Reprint from *Amer. Med. Bi-Weekly*, April 27, 1878.

[2] Traité des Maladies Chirurg., t. x. p. 105. [3] Clin. Méd., t. iii., art. Fissure.

[4] Dict. de Méd. et de Chirurg. Pract., art. Anus.

[5] Maladies du Rectum et de l'Anus, p. 149.

may coalesce at their edges and form a serpiginous sore. They are apt to be accompanied by similar eruptions in other parts of the body, and must be carefully distinguished from both mucous patches and soft chancres. The ulcerations which result from acute and chronic eczema, and from pruritus present no special characteristics. They are generally due to the injury inflicted by the nails of the sufferer.

From what has been said of the etiology of this class of ulcers it is plain that they must present many variations in appearance; yet the diagnosis of each from the other, and of the whole class from those which are to follow, will not generally be found difficult if proper attention is given to the history, the appearance of the lesion, and its course. The disease is generally of a healthy type, and tends to self-limitation and spontaneous cure rather than to increase. The ulcerative action is generally superficial, and tends to extend on the surface rather than in depth. It is generally surrounded by the signs of reparative action, and with proper care will undergo cicatrization which when extensive will result in stricture.

II. *Tubercular.*—There are two varieties of ulceration met with in persons of the tubercular diathesis; one due to the actual deposit and softening of tubercle, the other a simple ulceration containing no tubercular deposit but modified in its course by the patient's general condition of malnutrition. The former may properly be called tubercular ulceration, and the latter is better known as the ulceration of the tuberculous. The former is a very rare form of disease. It may occur in the rectal pouch, but its favourite site is at the verge of the anus where it may exist before any general manifestation of tuberculosis. Whether or not it is ever primary in the rectum proper is a point not yet decided. The characters by which such an ulcer may be recognized are its pale red surface covered with a small quantity of serum but devoid of healthy pus and appearing as if varnished; the absence of all surrounding inflammation and of the granulations which exist in a healthy sore; its tendency to spread on the surface rather than in depth; the absence of any great amount of pain; the regular outline ending abruptly in healthy skin; and above all, its chronicity and the utter failure of all remedies to affect its steady course. The diagnosis may be confirmed by the microscope.[1]

Whether such an ulcer is ever a cause of stricture is doubtful, it being doubtful whether a truly tubercular ulceration ever heals, or, in other

[1] In the excellent monograph of Péau et Malassez, *Etude Clinique sur les Ulcérations anales*, Paris, 1872, there may be found the history of a case of this kind with the microscopic report of Cornil, and a drawing of the microscopic appearances. Gosselin also has given a clinical lecture on a similar case in the *Gaz. Méd de Paris*, Mar. 27, 1880, calling attention to the main points in the diagnosis and treatment. Other literature of the subject may be found in Habershon *On the Diseases of the Abdomen*, London, 1862, p. 302 *et seq.*, and Mollière, op. cit., p. 647. Allingham also speaks of cases in which the diagnosis was confirmed by Paget, and remarks parenthetically that the disease is not as rare as is generally supposed.

words, results in the formation of contractile tissue. Such a sore starting in the walls of the rectum may result in perforation and fistula (fistula with large internal opening), and, as a matter of course, the usual operation on such a case would be followed only by disappointment. The treatment is generally only palliative. Mollière asks whether, if such an ulcer were completely extirpated or destroyed, before general symptoms had shown themselves, it might not be possible to prevent the general manifestation of the disease, as may be done in cases of tubercular testis. He bases the question on a case in which such an ulcer existed nearly four years before any other signs of tuberculosis were manifest.[1]

The other variety of this form of disease (the non-tubercular ulcer in the tuberculous person) is a simple sore modified in its course and character by the presence of the tubercular diathesis. It may result from any of the causes already mentioned, and many of the varieties already described may, under the proper conditions, assume its characteristics. It may occur either in the rectum or at the anus, and may vary in size from a mere spot a quarter of an inch in diameter to a sore covering the whole lower part of the rectum. It may extend in depth as well as on the surface, may perforate and cause fistulæ, or be attended with thickening of the wall without decrease in calibre. It is often attended by polypoid growths, it is painful, and the discharge is purulent. It neither extends rapidly nor heals easily, and yet it is surrounded by a healthy reparative action, and, unlike the true tubercular sore, it may be induced to heal, and is one of the causes of grave stricture. The process is essentially a chronic one, and several of the cases of "chronic ulceration of the rectum" reported by Curling, come properly under this category. It may easily be distinguished from true tubercle, but may readily be confounded with some of the varieties which are to follow.

III. *Scrofula.*—Allied to the class of ulcers last mentioned are those in which the scrofulous taint manifests itself, as it may do either in follicular ulcers of the rectum and large intestine, in lupus or esthiomène, or in rodent ulcer. The last two affect primarily the anus and perineum. Follicular ulceration is due to a chronic inflammation and fatty degeneration of the follicles of the rectum. These which first appear as small caseous nodules, break and leave small deeply excavated ulcers, which, being multiple, may coalesce and form larger ones of the chronic variety, capable of subsequent healing with the formation of cicatricial tissue. They may perforate the bowel and cause fistulæ when low down, or peritonitis when higher up. They may be only one of many manifestations of the scrofulous tendency in the same patient, and they often coexist with pulmonary disease.

Under the title of esthiomène (lupus exedens of the ano-vulvar region) a number of phagedenic ulcerations complicated with more or less hyper-

[1] Op. cit., p. 651.

trophy of the nature of elephantiasis have probably been described; but in spite of confusion of statement, this would seem to be a rare manifestation of scrofula which may precede any others. It commonly starts from the external organs of generation in the female, and only secondarily invades the anus and rectum. It is almost never seen in men. Its favourite starting point is in the perineum, and instead of being superficial, it may be perforating, and may produce great loss of tissue, turning the rectum and vagina into one cavity. At this stage other ulcers are apt to appear in the rectum or colon, causing diarrhœa and peritonitis; but whether these are of the variety just described as follicular, or are due to further deposits of lupus, is a question not yet answered. The ulcer is irregular in outline, with a granular base of a violet-red colour, and there is a slight sanious discharge. The edges are but little elevated, and are not undermined, and there is more or less hypertrophy of the surrounding tissue. It may cicatrize in part, the cicatrix being thin and white, at the same time that the ulcerative process is extending in the opposite direction. At a little distance from the ulcer there is often a pathognomonic appearance of slight, reddish, hard nodules of tubercular lupus separated from the primary sore by healthy skin. With this amount of disease the constitutional disturbance is often not sufficient to confine the patient to the house. The diagnosis is not generally difficult, though it may be confounded with cancer, phagedenic chancroid, and with elephantiasis with secondary ulceration. It is best distinguished from cancer by the cicatricial bands which it leaves behind; and from chancroid by the surrounding tubercles which in lupus develop in the thickness of the derma and ulcerate secondarily, while the ulcers surrounding chancroids are ulcerous from the first, being due to secondary inoculation. Van Buren[1] advances the theory that most of these ulcerations are due to the grafting of the syphilitic poison upon the scrofulous diathesis in women of improper habits. The duration of the disease is indefinite, and it seldom leads to fatal results. It is best treated by destructive cauterization and reclage.[2]

Rodent ulcer is very closely allied to epithelioma, and may in fact be considered one of its varieties, but it is distinguished from it clinically by the fact that it does not infiltrate surrounding tissues, does not involve the lymphatics, and does not become generalized. It is the same disease met with upon the face, and is exceedingly rare at the anus, being seen only twice in four thousand consecutive cases at St. Mark's Hospital, so rare indeed that Allingham has never seen but fourteen cases. According to his classical description it is found by preference at the verge of the anus, and extending from this point upwards into the rectum. It is irregular in shape, and its edges end abruptly in healthy tissue. Its sur-

[1] Loc. cit., p. 240.

[2] The best descriptions of this disease will be found in Huguier, *Mem. Acad. de Méd.* 1849; Harday, *Scrofule et Scrofulides*, p. 80; and Féan et Malassez, *op. cit.*

face is red and dry; it destroys superficially, attacking mucous membrane rather than skin, and undergoes rapid but only partial cicatrization under proper local and constitutional treatment. It never entirely heals, and is not to be included among the causes of stricture. It is at first generally mistaken for a late syphilitic manifestation, but is distinguished from it by the powerlessness of all treatment to prevent its steady progress. It is one of the most painful of all the ulcerative affections of this part, and ends fatally unless some other form of disease cuts short the history. It is best treated by complete excision, and this in one case of Allingham's secured immunity for a period of four years during which the patient was under observation.

IV. *Dysentery.*—In dysenteric ulceration, the diseased portion of the lower bowel becomes infiltrated with fibrinous exudation, and, as a result of the compression which this exercises, is necrosed and sloughs. When the slough is cast off there results a loss of substance, and if this is superficial the membrane may regain its former state, but if deep the usual callous cicatrix is produced in its place and stricture is the result. The ulcers resulting from this process vary much in size, location, and appearance. They may be minute circles, but are generally large, and, though their favourite site is the rectum and sigmoid flexure, they may be found over the whole length of the large intestine. They may extend so as to coalesce and leave only islands of mucous membrane between the extensive patches. The process usually involves only the mucous coat, but may extend in depth and result in perforation and its attendant evils. The coats of the bowel may become sinuous abscesses, so that, on dividing the prominent portion of the mucous membrane between two ulcers, several drachms of pus may escape (Habershon). Although all the symptoms of dysentery may result from ulceration due to other causes, as in Annandale's case,[1] there is no doubt that in this country the disease is one of the causes of chronic ulceration and stricture, and Habershon concludes that the disease is more common in our climate than is generally supposed.

In the "Medical and Surgical History of the War of the Rebellion,"[2] Dr. Woodward remarks that stricture resulting from dysenteric ulceration seems to have been much rarer than might have been supposed, and that no case has been reported at the Surgeon-General's Office either during the war or since; that the Army Medical Museum does not contain a single specimen; nor has he found in the American medical journals any case substantiated by *post-mortem* examination in which this condition is reported to have followed a flux contracted during the civil war. Although I cannot substantiate my case by *post-mortem* examination, I have now under treatment a soldier in the late war with two cicatricial strictures of the rectum which seem to be due to this cause. The man is awaiting the result of his application for a pension before submitting to colotomy. The

[1] Brit. Med. Journ., p. 681, 1872.

[2] Part II., vol. i., Med. Hist.

strictures are both within easy reach of the finger, the lower just within the internal sphincter, and the upper about an inch further up. The amount of cicatricial tissue is very extensive, the anus is patulous, and surrounded by the largest tags of skin I have ever seen in a case of ulceration. One of them measures an inch and a half in length by one inch in breadth. The rectal calibre does not admit of the passage of the index finger. There is nothing in the man's history to make me suspect syphilis. In a case of such extensive disease as this the diagnosis from scirrhus is only to be made by the history and the microscope.

V. *Venereal.*—A gonorrhœa of the rectum may be due to direct contact and inoculation in unnatural intercourse with a person suffering from gonorrhœa, or to accidental inoculation on the same person—in females by the flowing downwards of the discharge from the vagina to the anus, in males, by carrying the pus directly from the penis into the rectum. Rollet reports a case of the latter kind in a patient who was in the habit of passing his finger into his rectum to provoke an evacuation. The disease is a very rare one. Requin[1] believes it almost sure to follow unnatural intercourse with a person suffering from gonorrhœa, while Tardieu,[2] on the contrary, has never observed a single case. Gosselin[3] saw only one case at the Lourcine Hospital in three years, and Vidal de Cassis also makes note of its extreme rarity.[4] Mollière,[5] though not committing himself on the specific nature of the rectitis observed after inoculation with a gonorrhœal discharge, believes that the ulcerations thus resulting may end in stricture. During the height of the inflammation the rectum is hot, red, swollen, and granular in appearance, and there is an abundant purulent discharge, coming from the anus from time to time in clots. The irritation of this discharge, whether coming from the rectum or vagina, will cause erosions and fissures at the anus, which may attain a considerable size; or a previously existing fissure may become inoculated in this way and spread up into the rectum.

*Chancroids.*—One of the most frequent of all the superficial ulcerations at the anus is the soft chancre. It is said by Péan et Malassez to have constituted nearly one-half of all the ulcerations in this region examined at the Lourcine in 1868. It is much more common in females than in males, constituting one in nine cases of chancroids in the former, and one in four hundred and forty-five in the latter.[6] To account for this greater relative frequency only two things are necessary, the frequency of accidental contact of the male organ in coition, and the facility of auto-inoculation which is due to the proximity of the vulva and vagina. They are seen either on the skin around the anal orifice, or just within the canal,

[1] Éléments de Path. Méd. Rectite, t. i. p. 729.
[2] Etudes Médico-legales sur les attentates aux Mœurs, 4th ed., 1862, p. 179.
[3] Retrécissements Syph. du Rectum, Arch. Gén. de Méd., 1854.
[4] Dict. Encyc., art. Rectum. [5] Op. cit., p. 283.
[6] Fournier, Dict. de Méd. et de Chirurg. Prat., art. Chancre, p. 72.

and show a decided tendency not to pass above the upper border of the internal sphincter. So marked is this trait that their existence in the rectum proper has been denied, and the mucous membrane supposed to furnish no suitable ground for their inoculation. They may be single or multiple, may be situated at any point in the anal circumference, or may completely surround it. In one case under my care, the anus was completely surrounded by a group of these sores, and the ulceration extended from the posterior commissure backwards in the intergluteal fold its whole length, as far as the top of the sacrum, being superficial, however, in the whole of its course. In such a case the pain will generally be found very severe; a careful examination is impossible without ether, and there is apt to be free hemorrhage. The bleeing at the time of defecation was the chief cause of alarm to the patient in the above case. These sores have the characteristics of the soft chancre in other parts of the body. The class of women in whom they occur is always an aid to the diagnosis, and if suspicion as to their nature exists the test of auto-inoculation may always be tried.

Sores of this variety tend to spontaneous cure with cleanliness, and, if necessary, with judicious cauterization, and no matter how completely they may have involved the anus, or the skin around it, they seldom leave any traces of their former existence. On the other hand, the cure may be delayed, even for months, and the sore may assume a chronic type, due either to the existence of other disease in the rectum, as hemorrhoids, or to a syphilitic or scrofulous taint in the patient. They may be complicated by chronic œdema of the surrounding parts, and resemble the lupus exedens already mentioned, or by the gangrenous process known as phagedæna, generally of the chronic variety, and advancing in one place while healing in another.

And now we come to the debatable ground upon which so much has been said and written, and about which much remains still to be learned. Do these soft chancres ever cause stricture of the rectum, and are they the most common cause of those grave strictures so often met in women who have had syphilis, and which are generally known as syphilitic? In the light of our present knowledge, and subject to such modifications of opinion as future experience may teach, we shall answer yes to the first of these questions, and no to the second. That a soft chancre may extend into the rectum and cause great destruction, may cicatrize and leave stricture, is beyond doubt. Van Buren[1] says, "I have certainly seen this in several cases, but only in women;" Bumstead and Taylor[2] speak in the same way; Mollière[3] says, "Nevertheless, the soft chancre of the rectum does exist, and has even been seen to assume frightful proportions in this deep region;" and Bridge's[4] case is generally considered as conclusive,

[1] Op. cit., p. 243.
[2] Op. cit., p. 677.
[3] Venereal Dis. Phila. 1879.
[4] Arch. of Dermatology, Jan. 1876.

though its authority rests more upon the well-known character of the men who pronounced judgment upon it than upon the published record, for there is a strong suspicion of syphilis, and no account of the test of auto-inoculation.

Dr. Mason's[1] paper, to prove the chancroidal nature of this kind of ulceration and stricture, has this advantage over the similar one by Gosselin,[2] that he unhesitatingly adopts the dualistic theory, and leaves the reader in no doubt as to what he means by the chancroid. That this is not the case in the latter article one may readily convince himself by a careful perusal, and for my own part I am unable to see where, in this justly celebrated article, the non-syphilitic nature of the disease in question is taught; for the author leaves us in absolute ignorance as to which of the two at present well-known varieties of "chancre" is, in his opinion, the primary cause of the stricture; and it is rather by inference than otherwise that his "chancre" is interpreted to mean chancroid. The idea left on the mind of the reader is not that the disease is not syphilitic, but that it is neither a primary, secondary, nor tertiary manifestation of syphilis as such are generally understood, but something developed in the neighbourhood of the primary sore. Gosselin, though he comes nearer to it than had ever been done before, just missed enunciating the chancroidal nature of these strictures, though Bassereau had distinguished between the two chancres two years before. What he does assert is that they are not to be considered as manifestations of constitutional syphilis, but that they are of local character, "due to a special modification of the vitality of the tissues contaminated by the virus of the chancre, comparable to the lengthening and hypertrophy of the prepuce with contraction of its orifice, which follows a chancre on its under surface in which the disease is evidently neither an œdema, nor a specific induration, nor a constitutional affection, but a local lesion due to the presence of the chancres, and consecutive to the inflammation which they have caused." In the same class of lesions he places hypertrophy of the labia, condylomata, and other vegetations.

The weight of evidence then is decidedly in favour of the occasional causation of stricture by chancroid; but that all of the many so-called syphilitic strictures are not due to this cause is rendered probable by the fact that a large proportion of them are developed late in the course of true syphilis, and are not preceded by any ulceration, either chancroidal or otherwise, at the anus, but start at a point well within the sphincter muscle. Of their true nature we shall speak later.

True chancre at the anus is not very uncommon. Though Péan et Malassez saw only one case at the Lourcine in 1868, they explain the fact by the slight local disturbance which the sore causes—so slight that the

[1] Amer. Journ. of the Med. Sci., Jan. 1873, p. 22.
[2] Arch. Gén. de Méd., 1854.

patients do not seek treatment. They give the proportion in this place as compared to chancres in other parts of the body as one in sixty-eight; and as much more frequent in women than in men (one in thirteen in the former to one in one hundred and seventy-seven in the latter). These figures are about the same as those reached by Jullien. In the female, a sore in this locality is easily accounted for by accidental inoculation; in the male, by sodomy. They are most likely to be mistaken for simple fissures, but they have a hard, raised outline and indurated base, are less painful, and devoid of the healthy surface of the former. In any case of suspicion constitutional treatment should not be commenced till the diagnosis is completed by the appearance of general symptoms.

True chancre within the rectum is very rare indeed. Ricord, Fournier, and Vidal de Cassis each reports a single case, and in the latter the induration was said to have been so great as to cause stricture.[1] Mollière carefully analyzes the evidence on this point up to date, and concludes that though a true chancre may exist in the rectum, it never causes stricture, for the reason that the chancre does not produce any great amount of ulceration, and that the induration tends to spontaneous resolution, or at least rapidly yields to the influence of mercury. The difficulties surrounding the diagnosis of such a sore are manifest. Its mere appearance would scarce be conclusive, and in women the absence of any other sore which might lead to secondary symptoms would need to be absolutely proved—a very difficult thing to do.

*Secondary Syphilis.*—Two of the secondary manifestations of syphilis are to be looked for at the anus and rectum. The first is the mucous patch, not an infrequent sign in the former locality; and one liable to assume ulcerative action from local irritation or inoculation with the virus of the chancroid. Generally, however, they are devoid of symptoms and disappear either without treatment, or simply with cleanliness and the use of an astringent wash. That the mucous patch may appear in the rectal pouch also, is probable from analogy, and such cases have been reported,[2] but as they never form cicatrices they must be counted out of the etiology of stricture.

Well-marked cases of secondary ulceration in the rectum, such as are seen in the mouth and throat, have never been reported, and yet that they exist and may cause extensive destruction is rendered very probable from analogy. I have seen two cases in syphilitic women where I found no more plausible explanation of the presence of extensive ulceration and stricture than this. In both the disease began well within the rectum and was not chancroidal; and in both it began as ulceration, and was not therefore what we shall soon speak of as ano-rectal syphiloma. In one it coincided with a late secondary eruption, but though the eruption yielded promptly to general treatment the ulceration did not. As, however,

[1] Van Buren. [2] Mollière, p. 641.

neither of the cases was conclusive, I hesitate to speak more positively than this, merely suggesting, as has been done before, this as a not uncommon cause of many of the syphilitic strictures.

*Tertiary Lesions.*—The tertiary manifestations of syphilis liable to occur in this part of the body are ulcerations, gummata, and ano-rectal syphiloma. The ulcerations have the same characters here as elsewhere; their favourite site is at the anus, and they generally do not extend far within it: though they may begin in the rectum and only involve the anus secondarily, this is very rare. They are essentially chronic in course, give rise to all the symptoms which ulcers in this part generally give, and are most effectually treated by combined general and local measures.[1]

Gummata also may affect either anus or rectum, though their rarity in the latter may best by judged by the statement of Fournier,[2] that he has never seen one, and only admits their existence on the testimony of Verneuil, who has seen one. However, their presence, *a fortiori* probable, has been demonstrated by other observers than Verneuil. Esmarch[3] admits it; Zeissl[4] reports a case in a male, and Zappula[5] another; Mollière[6] has seen one starting at the anus and extending into the ischio-rectal fossa; and Fournier[7] met with one in a young woman starting in the left buttock and secondarily involving the anus and then the rectum.

The ano-rectal syphiloma described by Fournier is not primarily an ulceration, but it leads to ulceration, and according to him is the most common cause of stricture of the rectum of which we have spoken in connection with the chancroid. It is defined by him as "an infiltration of the ano-rectal walls by a neoplasm, whose initial structure is still undetermined, but susceptible of degenerating into retractile fibrous tissue and of constituting in this way more or less extensive intestinal strictures." He particularly emphasizes the fact that this process begins in the submucous layers, and that the mucous membrane is only secondarily destroyed, being at first entirely free from ulceration and from cicatrices. Its point of predilection is in the rectal pouch, but it may be found below. He has never seen it above. Sometimes only two or three centimetres of the wall are involved, but when it begins at the anus it may reach seven or eight centimetres up. It forms a cylinder around the whole circumference of the bowel. In the initial stages the rectum is only stiffened and thickened, but not contracted. When the infiltration is limited to the vicinity of the anus, it is not uniformly diffused around its circumference, but forms irregular masses which are at first covered by healthy tissue. These are painless unless inflamed, but are liable to erosion and ulceration. The disease

[1] See Fournier, Lésions tertiaires de l'Anus et du Rectum, Paris, 1875; and Vidal, Leçons sur la Syphilis, Paris, 1879.

[2] Op. cit., p. 8.

[3] Pitha u. Billroth, Handb., Erlangen, 1872.

[4] Vrtljschr. f. Dermatol. u. Syph., 1876, H. II.

[5] Ann. Univ. di Med., Milan, ccxiii., 1870.

[6] Op. cit., p. 645.

[7] Op. cit.

is more common in females than in males—eight to one. Unfortunately the specific character of this induration cannot be proved by the microscope, there being nothing distinctive in its structure as there is in gummata. The theory advanced by Fournier has held its ground, however, and has gained adherents. Duplay[1] adopts it, and Van Buren has distinctly recognized this form of disease, and has also "seen it disappear under anti-syphilitic treatment," though Fournier distinctly says, the anti-syphilitic treatment exercises no curative influence on confirmed syphilitic retraction, and this he accounts for on the ground that the contraction caused by syphilis is less a syphilitic lesion than the ultimate consequence of a syphilitic lesion, just as a cicatrix is the ultimate consequence of a wound. I have tried the plan of nicking and subsequent constant dilatation with a plug covered with mercurial ointment, recommended and so skilfully carried out by Dr. McMasters[2] in the treatment of one of these cases, but cannot recommend it, for I do not believe it will generally be borne. In my own case it became utterly intolerable in a few days, and finally caused pelvic cellulitis, an accident which Dr. Haupt, of St. Francis Hospital, informs me, has also befallen a similar case of his own.

VI. *Stricture.*—Not only is ulceration the most common cause of stricture, but any form of stricture is liable by its obstructive action to set up ulceration in the wall above. At first there is dilatation of the rectal pouch and hypertrophy of its walls, due to the effort to overcome the obstruction. In this way the coats may become double their natural thickness. Next an ulcerative action is set up in the mucous membrane, probably due to the irritation and traumatism of feces. Beginning as a simple congestion, it advances to complete destruction of the tissue over the whole circumference of the bowel, and for a distance sometimes of several inches above the stricture. As a result of this process the muscular layer may be entirely denuded, and perforated at a point high above the original disease.[3]

VII. The *gangrene* liable to follow the continued fevers, and particularly liable to affect the female genitals, may cause extensive sloughing and subsequent stricture. It is a form of disease to which attention need only be called to make the classification complete.

*Diagnosis.*—The existence of ulceration around the anus becomes manifest on the most cursory inspection, but there is but one way to determine its presence within the rectum, and that is one which the general practitioner seldom adopts. It is easier to give diarrhœa mixtures in the hope of a cure than to etherize a patient, and thoroughly explore the rectum for the sake of diagnosis; and for that reason many a case of curable disease has been allowed to reach an incurable stage before its existence

[1] Le Progrès Méd., Nov. 30, 1876.
[2] N. Y. Med. Jour., Oct. 1876.
[3] See Mollière, p. 294; Gosselin, loc. cit.; Lancereaux, Bull. de la Soc. Anat., 1859; Malassez, Dict. Encyc., p. 728.

has been certainly determined. To the practised examiner much may be learned of the condition of the rectum by a simple digital examination, but to learn anything of ulceration alone in this way requires more practice than most surgeons or physicians ever attain. All attempts to pull open the anus, or to dilate it with cylindrical or fenestrated speculæ so as to see the mucous membrane of the rectal pouch, end only in dissatisfaction to the surgeon and useless pain to the patient. It is astonishing how well an ulcer of the rectum may be seen if approached properly in an etherized patient, through a thoroughly dilated sphincter, and with a Sims's speculum and good light. Approached in this way no one need be in doubt as to the existence of ulceration within four inches of the anus, and I cannot too strongly insist upon this point, for I well remember the sense of satisfaction which I experienced when, after a few trials of the wrong way, being deterred from the right by the trouble which necessarily attends the use of ether, I first began to make a practice of really *seeing* the condition of my patients. There is a certain train of symptoms, however, which render the existence of advanced ulceration extremely probable, and these have been so well described by Allingham that we can scarce do better than give them in his own words; merely stating that by their existence we have several times been able to predict, from the history of the patient, what condition would be found on examination, and to verify the prediction under ether.

"In the majority of these cases the earliest symptom is morning diarrhœa and that of a peculiar character, in my opinion quite indicative of the disease, and can only be confounded with cancer. The patient will tell you that the instant he gets out of bed he feels a most urgent desire to go to stool; he does so, but the result is not satisfactory. What he passes is generally wind, a little loose motion, and some discharge resembling 'coffee-grounds,' both in colour and consistency; occasionally the discharge is like the 'white of an unboiled egg,' or 'a jelly fish;' more rarely there is matter. The patient in all probability has tenesmus, and does not feel relieved; there is something of a burning and uncomfortable sensation, but not actual pain; before he is dressed very likely he has again to seek the closet; this time he passes more motion, often lumpy, and occasionally smeared with blood. It also may happen that after breakfast, taking hot tea or coffee, the bowels will again act; after this he feels all right, and goes about his business for the rest of the day, only, perhaps, being occasionally remainded by a disagreeable sensation that he has something wrong with his bowel. . . . . After this condition has lasted for some months more or less, as influenced by the seat of the ulceration and the rapidity of its extension, the patient begins to have more burning pain after an evacuation, there is also greater straining and an increase in the quantity of discharge from the bowel; there is now not so much jelly-like matter, but more pus; more of the coffee-ground discharge and blood. The pain suffered is not very acute, but very wearying; described as like a dull tooth-ache, and it is induced now by much standing about or walking. At this stage of the complaint the diarrhœa comes on in the evening as well as the morning, and the patient's health begins to give way, only triflingly so, perhaps, but he is dyspeptic, loses his appetite, and has pain in the rectum during the night, which disturbs his rest; he also has wandering and apparently anomalous pains in the back, hips, down the leg, and sometimes in the penis."[1]

[1] Allingham, op. cit., p. 219.

The existence of the ulceration being decided, its nature remains to be determined. We have already, in speaking of the different varieties, given some of the chief points in differential diagnosis, and to these we must again refer the reader. In all cases the history of the case must be taken into account as well as the appearances of the lesion. Of the many varieties we have mentioned, some may be almost certainly excluded from their great rarity. Amongst these are the true chancre, the tubercular deposit, lupus, and rodent ulcer. In the majority of cases, after excluding syphilis, the ulcers in the rectum proper will be of the simple nature first described, modified more or less by the general condition of the patient.

We need scarcely call attention to the extreme gravity of the disease under consideration, or to the certainty with which, if untreated, or sometimes with the best of treatment, it will end either fatally, or in a condition requiring the gravest surgical procedures for its relief. The picture is unfortunately a familiar one.

As to *treatment* we shall speak only of the treatment of the ulceration, and not of its most frequent secondary effect—stricture,[1] and this treatment may be summed up in a very few words. Two things are absolutely necessary—perfect rest and fluid diet, preferably milk. These alone will cure most of the cases that are curable, and without them no treatment will be of much avail. To them, however, other things may be added in the way of general medication and local applications. Cod-liver oil fulfils the double indication of tonic and laxative, and to it iron may often be added with advantage. The list of local remedies is a long one, bismuth, iodoform, and solutions of nitrate of silver being among the best. The former may be used in powder or as an enema; the iodoform is, perhaps, best applied as a suppository in a medium which is easily dissolved, and will not cause the irritation of a foreign body; and the nitrate of silver may be used either in weak or strong solutions according to the indication to be fulfilled. The same treatment applies to venereal ulcers at the anus as in other parts of the body, and it is readily seen why much more active treatment is applicable here than within the rectal pouch. Even here, however, destructive cauterization must be employed with great caution, if at all. The knife may be necessary and beneficial in two ways: first, for dividing the muscular fibres forming the base of the ulcer, whether within the rectum or at the verge of the anus; and second, for completely dividing the anus and its muscular ring down to the coccyx. The latter is a means of cure which need not be delayed till stricture has formed. One obstacle which will stand in the way of any successful treatment will always be the difficulty of inducing the patient to submit to the necessary restraint—for these cases do not generally cause any great amount of suffering at first, and patients can hardly be induced to believe in their

[1] See articles on Treatment of Stricture in New York Med. Journ., March, June, and December, 1880.

extreme gravity. After a more or less prolonged use of some quack remedy for the piles, they begin to pass from one doctor to another, and from one treatment to another, till nothing remains but the surgical procedures already hinted at.

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## Article XI.

### Odor Mortis, or the Smell of Death.

By A. B. Isham, M.D., Professor of Materia Medica and Therapeutics in the Cincinnati College of Medicine and Surgery, Cincinnati, Ohio.

In the Cincinnati *Clinic* of September 4, 1875, was published a paper on "Odor Mortis, or the Death Smell," read by me before the Cincinnati Academy of Medicine, Aug. 30, 1875. This paper was based upon observations made while an inmate of one of the surgical wards of Stanton General Hospital, Washington, during the summer of 1863, as well as upon instances in which the odour had been met with in private practice. The character of the odour was moschiferous, yet it appreciably, though almost indescribably, differed from that of musk. In this paper I desire to present two recent instances where this odour attracted notice, together with some new observations concerning it.

*Instance* 1. July 31, 1878, on the eve of Dr. Bartholow's departure for Europe, I was requested to assume charge of his patient Mr. ——. The patient was unconscious, with irregular, noisy respiration, with only a feeble trace of a pulse, indistinguishable at times, and was dying slowly from effusion within the membranes of the brain, the result of chronic alcoholism. I was with him through the middle of the night, and during this time noticed upon my right hand a smell resembling that of musk. This hand was exclusively used in examining the patient's pulse and in noting the temperature of his body. Earlier in the night there had been no smell upon it. The left hand acquired the same smell from handling the body, and it was also communicated to the handle of a fan held in the hand. A gentleman from Chicago who had volunteered as a night watcher, and whose attention had been called to the odour, without any suggestion to its character, promptly distinguished it. The ladies of the household did not use musk, and no perfumery had been in the room or about the patient. Neither had I handled or come in contact with anything, other than the patient, from which odour could be derived. Death occurred thirty-three hours later.

*Instance* 2. About midnight of May 11, 1879, was called to see M. G., æt. 7. Had several months previously been under my care with acute duodenitis, from which she had recovered, but with impaired digestion and defective assimilation. In consequence she had passed into the hands of an irregular practitioner. I found her in *articulo mortis* with general anasarca the result of blood dilution. Upon entering the room there was a plainly perceptible musky odour. There was no musk about the house,

nor had any other perfumery been employed. Death ensued in about an hour and a half.

The smell, as said, was most closely allied to that of musk, yet the impression upon the olfactory organs was more delicate, more subtle. Besides there was an indescribable feature pertaining to it which seemed to impress the respiratory sense, and trouble respiration—a vague sensation of an irrespirable or noxious gas. To the convalescent loungers of sharp olfactory sense about the ward of Stanton Hospital, the smell was familiar, and was termed the *death smell*. It was not uncommon to hear the expression, "Some one is dying, for I smell him."

It was rare to find the odour widely diffused, and where it appeared to be, it was probably due to a continuance of the first impression upon the olfactory end organs. As commonly encountered, it has suggested the idea of a gaseous aggregation or body containing odoriferous particles possessing an attraction for each other and so held together. In the hospital ward, while present in one location, it was not experienced in another slightly removed. It also quickly disappeared from the first location, likely moved along by atmospheric waves. The vapour in which the odorous molecules were suspended appeared, in some instances at least, heavier than the atmospheric air. Thus I have sometimes recognized the smell in lower hallways, the patient occupying the upper portion of the house, and in Instance 1, already detailed, it was only detected upon handling the body. This affords one explanation why it may not more often claim recognition. From its heaviness it subsides and does not enter the organ of olfaction. Other reasons why it may escape attention are, that the olfactory sensibilities may be blunted by long continuance in an illy-ventilated, bad smelling sick-room; or the air currents may carry the odour in a direction not favourable for observation.

The only mention of an odour which may be analogous, I have seen in literature, is by Dr. Badgely, of Montreal, in a report on Irish emigrant fever. It is thus quoted by Drake in his work on the "Principal Diseases of the Interior Valley of America," as taken from the *British American Journal*:—

> "I hazard the idea that the ammoniacal odour emanating from the living body, so strong on opening the large cavities, and so striking on receiving some of the blood out of the vessels, arteries as well as veins, into the hand, were all due to the same condition of this fluid; the actual presence of ammoniacal salts, one of the surest proofs of the putrescent condition of the vital fluid; in fact, to speak paradoxically, of the *existence of death during life*."

Here the source of the smell is indicated, as coming from the development of ammonia in decomposing blood. It is known that musk contains ammonia largely, together with a volatile oil which has never been isolated. Robiquet holds that its odour depends upon the decomposition of the ammonia liberating the volatile matters of the oil. The blood also contains a volatile oil, and it is familiar that it possesses odour. This odour

may be developed by adding sulphuric acid to blood and boiling. This process was formerly resorted to in order to distinguish blood in questionable cases, but it has been rendered obsolete since the discovery of the blood corpuscles by the microscope. Such a method would be well suited to drive off the ammonia, free from decomposition, together with the volatile oil—to which substances the odour is very likely due.

In my paper, referred to at the commencement, I was inclined to limit the occurrence of the manifestation to within a very short time of death. That it cannot be so restricted is evidenced by Instance 1, where it was encountered thirty-three hours before death. The conditions here were not unfavourable for its development. From the state of circulation, chemical changes were evidently proceeding in the blood, elevating its temperature and liberating those fugacious matters to which we would ascribe the origin of the death smell.

Richardson and Denis have shown by experiments that ammonia salts added to blood preserve its fluidity, by preventing the deposition of fibrin. This is not without a bearing upon the origin of the *odor mortis*. In gradual death coagulation commences first in the capillaries and proceeds towards the heart. The escape of ammonia from the blood in the peripheral vessels, liberating the volatile principles and engendering smell, permits local deposition of fibrin long before the heart has ceased its action.

But Lange has more recently investigated the action of ammonia in living and dead blood. He found that carbonate of ammonia added to living blood was only given off at a temperature of from 176° to 194° F. When, however, ammonia was added to blood from a dead animal it was evolved at a temperature of from 104° to 113° F. It is well ascertained that in many diseases, just previous to death, the blood temperature is raised above the lowest given by Lange. In some diseases, too, the blood heat falls below the normal body temperature. This affords another and principal explanation why the *odor mortis* may not be appreciable. These experiments of Lange also show why this smell is not developed by diseases characterized by great elevation of temperature—simply because the blood has lost none of its vital properties.

WALNUT HILLS, CINCINNATI, OHIO.

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## ARTICLE XII.

### RENAL CALCULUS DISCHARGED FROM THE KIDNEY AND RETAINED IN ABDOMINAL WALLS SEVEN YEARS; REMOVAL.

By R. L. REA, M.D., Professor of Anatomy in the Chicago Medical College, Chicago, Illinois.

NOV. 8, 1880, I was called in consultation by Dr. H. Tomboeken of this city, to see Miss E. W. She is 18 years of age, German parentage, fair complexion, plump and healthy, all the functions of the body normal.

Dr. Tomboeken, the attending physician, furnished me with the following history:—

"In the spring of 1874, I was called to treat Miss W. for a lumbar abscess. The mother informed me that the patient began to complain one year previously of general bad feeling, losing strength and flesh, the face and limbs beginning to bloat, for which she was attended by her physician. Later a painful swelling showed itself in the left lumbar region which was poulticed until suppuration took place, and the abscess pointing was opened. About one pint of thick offensive pus was discharged, mixed with shreds half an inch long of what seemed rotten flesh. The abscess continued to discharge freely, the patient growing weaker.

"Topical treatment only was employed; poultices and injections, for about five months, during which time she continued to grow worse, and at the end of which time I was called in. The patient at that time was 12 years of age, anæmic, œdematous, and small for her age, hectic, with poor appetite.

"Examination showed a fistulous opening 3½ inches to the left of lumbar spine, and one inch above the crest of the ilium, and a second cicatrix 2 inches nearer the spine, the seat of the original opening. A probe could be introduced to the depth of 3½ inches upward, inwards, and to the left, the point of the probe being, as near as I could judge, 2 inches deep in a direct line from the surface. The discharge from the opening was sero-purulent, amounting to two or three ounces daily.

"I addressed my treatment mainly to the general health of my patient, giving stimulants, tonics, cod-liver oil, and nutrients, and opening the fistula up, shortening it one inch, I directed stimulating injections into it.

"This was continued eighteen months; at the end of which time my patient's general health was greatly improved, the discharge had diminished to two drachms per diem, but still showed no disposition to close. I would say here that there was not during my attendance or previously any pain, swelling, or soreness pointing toward the spine as the seat of the trouble.

"During an absence in Europe of several months, the patient was left in the hands of another physician, who made vigorous endeavours to heal the fistulous opening without success. Upon my return to the city, I found my patient in seemingly perfect general health, the fistula about the same as it had been for the last four years. Meantime the girl of 12 had grown to be a young lady, and the annoyance of the discharge, with my urgent solicitations, at last had the effect of gaining the consent of her parents to a surgical operation for her relief. With this object I called in Dr. R. L. Rea."

Examination revealed a fistulous opening two inches above the crest of the ilium, 3½ inches from the spine, a probe could be passed obliquely upwards and inwards about 2 inches penetrating towards the centre of the body. Discharge sero-purulent, about one teaspoonful daily, very slight induration felt in the line of the fistula. It was determined to make an explorative operation, which was consented to by parents, to ascertain the cause of the discharge, feeling that there was some local cause if it could be reached.

On *Nov.* 22, the patient being thoroughly anæsthetized by Dr. Tomboeken, I introduced a director into the sinus, and after making a free cutaneous incision followed the director, and detected a circumscribed callosity at the end of the canal, and upon opening it found it to be a sac from which I removed a calculus more than half an inch long (14 mm.), three-eighths of an inch (9 mm.) in diameter, rough mulberry shaped, con-

taining a smooth oval cavity, opening at one end. The position of this calculus in the body was midway on a line dropped vertically from a point 2½ inches behind the anterior extremity of the last rib down to the crest of the ilium, 2¼ inches from the surface, near the anterior surface of the quadratus lumborum muscle.

Dr. Tomboeken analyzed a portion of the calculus, and found it to consist of oxalate of lime. How came it there? My impression, seconded by that of Dr. T., was that a calculus had formed in the pelvis of the kidney, its unusual size obstructing the ureter, inflammation set in, an abscess formed, the calculus was carried towards the surface of the body, detained, and was finally encysted as we found it. The nucleus of the stone was undoubtedly some of the more soluble elements that enter into calculous formations, which were exposed to the soluble action of the fluids, and were dissolved and passed off in the pus.

The wound was filled with carbolized lint, after stimulating the bottom of it with nitrate of silver; 10 grains of sulphate of quinia were administered every 12 hours for three days; and now, at the end of two weeks, the patient is in excellent condition, wound healing, and every prospect of a complete recovery.

*Feb.* 11, Dr. Tomboeken reports the wound healed and patient discharged on Feb. 5 in perfect health.

The case is one of unusual interest, as showing Nature's possibilities.

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## ARTICLE XIII.

### STATISTICS OF AMPUTATIONS PERFORMED AT ST. FRANCIS HOSPITAL, JERSEY CITY, N. J., FROM 1871 TO 1881.

By THEODORE R. VARICK, M.D., Medical Director of, and Surgeon to St. Francis Hospital, Surgeon to Jersey City Charity Hospital, Jersey City, New Jersey.

THE value and interest which attach to statistics relating to amputations, are evidenced by the able reports of Norris and Morton of Philadelphia, Hayward of Boston, Buel of New York, Callender and Phillips of England, and numerous others in this country as well as in Europe. I shall, therefore, offer no apology for presenting to the Profession the results of nearly ten years' service in St. Francis Hospital, Jersey City, viz., from July, 1871 (the time of the organization of the Hospital Staff), to January 1st, 1881.

Situated as Jersey City is, being the terminus of no less than eight lines of railroad, with their various connections, all converging to a point within an area of about one mile, together with their many shops and drill yards; it is not surprising that many injuries resulting therefrom are admitted to our hospitals.

The great preponderance of accidents from the sources alluded to will be seen by a perusal of the following statistics:—

| No. | Admission. | Name. | Age | Disease or injury. | Part amputated. | Immediate or otherwise. | Result. | Period of discharge, or death. |
|---|---|---|---|---|---|---|---|---|
| | 1871. | | | | | | | |
| 1 | July 27 | Patrick O'Neill, | 26 | C. c. fract. leg, railroad accident, | Thigh, lower 3d, | Immediate, | Cured, | Nov. 27, 1871 |
| 2 | Sept. 24 | Ed. Ferguson, | 24 | C. c. c. fract. leg, railroad accident, | " " " | " | Died, | Oct. 30, 1871 |
| 3 | Dec. 8 | Mich. Hartwater, | 20 | C. c. fract. foot, " " | Syme's, | " | Cured, | Jan. 14, 1872 |
| | 1872. | | | | | | | |
| 4 | Jan. 8 | Morris Harely, | 30 | C. c. c. fract. thigh, railroad accident, | Thigh, middle 3d, | Immediate, | Died, | Jan. 10, 1872 |
| 5 | Feb. 8 | Thomas Green, | 30 | C. c. c. fract. thigh, " " | " " " | " | " | Feb. 13, 1872 |
| 6 | March 9 | Luke McGuire, | 45 | C. c. c. fract. thigh, " " | " " " | " | Cured, | April 3, 1872 |
| 7 | April 17 | Charles Lester, | 24 | C. c. c. fract. thigh, " " | " " " | " | " | May 11, 1872 |
| 8 | " 19 | Pat. Ginnivan, | 27 | C. c. c. fract. thigh, " " | " " " | " | " | Aug. 31, 1872 |
| 9 | June 17 | Joseph Sweeney, | 21 | C. c. fract. foot, " " | Pirogoff, | " | " | Oct. 9, 1872 |
| 10 | Aug. 5 | Ed. King, | 32 | C. c. fract. arm, " " | Arm, | " | Died, | Aug. 9, 1872 |
| 11 | Nov. 4 | Samuel Meade, | 12 | C. c. c. fract. leg, " " | Thigh, lower 3d, | " | Cured, | Jan. 10, 1873 |
| 12 | Dec. 14 | Joseph Fisher, | 13 | C. c. c. fract. leg, " " | " " " | " | " | May 30, 1872 |
| | 1873. | | | | | | | |
| 13 | Jan. 21 | Jere Sullivan, | 40 | Caries knee-joint, | Thigh, | ..... | Cured, | Feb. 25, 1873 |
| 14 | " 29 | James Hession, | 26 | C. c. c. fract. thigh, railroad accident, | Thigh, middle 3d, | Immediate, | " | " 20, 1873 |
| 15 | Feb. 13 | David S. Scofield, | 36 | C. c. fract. hand, " " | Arm, | ..... | Died, | ..... |
| 16 | April 19 | John Sherman, | 27 | C. c. c. fract. foot, " " | Leg, middle 3d, | ..... | " | April 30, 1873 |
| 17 | May 12 | Jose Lopez, | 27 | C. c. c. fract. thigh, " " | Thigh, middle 3d, | Immediate, | " | May 16, 1873 |
| 18 | " 23 | Pat. Connolly, | 32 | C. c. c. fract. both thighs, railroad accid't, | Thigh, l. mid. 3d, | " | " | June 2, 1873 |
| 19 | " 30 | Thos. Terwillager, | 23 | C. c. c. fract. thigh, railroad accident, | Thigh, middle 3d, | " | Cured, | July 18, 1873 |
| 20 | Aug. 1 | Mich. Garey, | 60 | No record, | Arm, | ..... | Died, | Aug. 16, 1873 |
| 21 | " 5 | James Moran, | 15 | C. c. c. fract. leg, railroad accident, | Leg, | Immediate, | " | Sept. 2, 1873 |
| 22 | " 26 | Thomas McCoffen, | 32 | C. c. c. fract. arm, " " | Arm, | " | " | Oct. 9, 1873 |
| 23 | Sept. 2 | John Day, | 28 | C. fract. arm, " " | " | " | " | Sept. 9, 1873 |
| 24 | " 13 | James Kilroy, | 28 | C. c. c. fract. leg, " " | Leg, | " | " | Oct. 9, 1873 |
| 25 | Dec. 2 | William Murray, | 17 | Caries condyles femur, | Thigh, lower 3d, | ..... | " | Dec. 24, 1873 |
| 26 | " 7 | John Connors, | 35 | Gangrene leg, | " " " | ..... | " | " 22, 1873 |
| | 1874. | | | | | | | |
| 27 | May 14 | Francis Hopkins, | 13 | C. c. fract. metacarpus, | Forearm, | Immediate, | Cured, | June 9, 1874 |
| 28 | " 15 | Michael Duane, | 45 | ..... | " | " | " | July 13, 1874 |
| 29 | " 15 | M. K. Lynch, | 28 | ..... | " | " | " | ..... |
| 30 | June 7 | And. Wannamacher, | 16 | C. c. fract. thigh, railroad accident, | Hip-joint, | " | Died, | June 9, 1874 |
| 31 | " 9 | Margaret Simpson, | 47 | Abscess knee-joint, | Thigh, | ..... | " | " 23, 1874 |

| No. | Admission. | Name. | Age | Disease or injury. | Part amputated. | Immediate or otherwise. | Result. | Period of discharge, or death. |
|---|---|---|---|---|---|---|---|---|
| 32 | June 21 | James McCormick, | 21 | Lac. wound of hand, | Forearm, | Immediate, | Cured, | July 19, 1874 |
| 33 | July 11 | Fred. Everly, | 26 | ..... | Arm, | ..... | Died, | Aug. 13, 1874 |
| 34 | " 15 | Luke Boylan, | 30 | Lac. wound forearm, | Forearm, | Immediate, | Cured, | Oct. 8, 1874 |
| 35 | Aug. 5 | Pat. Logan, | 23 | Lac. wound forearm, | " | " | Died, | Aug. 26, 1874 |
| 36 | " 29 | Thomas Nevins, | 30 | Gangrene leg, | Leg, | ..... | " | Sept. 28, 1874 |
| 37 | Sept. 14 | Andrew Scott, | 20 | C. c. fract. leg, | Thigh, lower 3d, | Immediate, | Cured, | Oct. 28. 1874 |
| 38 | Oct. 3 | James Ryan, | 28 | C. and l. wound of arm, | Arm, | " | Died, | " 29, 1874 |
| 39 | Nov. 3 | Samuel Outcalt, | 19 | C. fract. forearm, | Forearm, | " | Cured, | Nov. 5, 1874 |
| 40 | " 28 | George Egerson, | 48 | ..... | Foot, | ..... | " | Dec. 6, 1874 |
| 41 | " 14 | Florence Simon, | 22 | C. fract. leg, | Knee-joint, | Immediate, | Died, | Nov. 15, 1874 |
| 42 | Dec. 30 1875. | Michael Noonan, | 46 | C. c. fract. leg, | Leg, | " | " | Jan. 7, 1875 |
| 43 | Jan. 9 | Charles Titsworth, | 19 | ..... | Arm, | ..... | Cured, | Feb. 5, 1875 |
| 44 | Feb. 26 | Robt. Brummegen, | 60 | C. fract. arm, | " | Immediate, | " | May 27, 1875 |
| 45 | April 5 | Alfred Herbert, | 14 | C. c. c. fract. leg, railroad accident, | Thigh, | " | Died, | April 10, 1875 |
| 46 | " 6 | John Abell, | 50 | Lac. wound of hand, | Forearm, | " | Cured, | Aug. 21, 1875 |
| 47 | June 27 | Susan Wishinski, | 50 | Cellulitis of leg (abscess), | Thigh, lower 3d, | ..... | Died, | July 30, 1875 |
| 48 | Aug. 30 | Catherine O'Neill, | 29 | ..... | Leg, | ..... | Cured, | Jan. 9, 1876 |
| 49 | Sept. 25 | Pat. Gilligan, | 27 | C. c. fract. leg, railroad accident, | " | Immediate, | " | March 27, 1876 |
| 50 | Dec. 18 1876. | John Connor, | 52 | Caries metacarpal bones, | Forearm, | ..... | " | Feb. 8, 1876 |
| 51 | Jan. 8 | James Moore, | 17 | C. c. fract. leg, railroad accident, | Knee joint, | Immediate, | Died, | Jan. 30, 1876 |
| 52 | April 13 | James Quinn, | 9 | C. c. fract. leg, " " | Thigh, lower 3d, | " | " | April 15, 1876 |
| 53 | " 22 | William Mount, | 23 | C. c. c. fract. leg, " " | Knee-joint, | " | " | May 7, 1876 |
| 54 | May 9 | George Schanck, | 23 | C. c. c. fract. leg, " " | Thigh, lower 3d, | " | " | June 1, 1876 |
| 55 | June 13 | William Mahoney, | 35 | C. c. c. fract. metacarpus, | Forearm, | Immediate, | Cured, | July 6, 1876 |
| 56 | Sept. 27 | John Dynes, | 54 | C. c. fract. leg, railroad accident, | Thigh, lower 3d, | " | Died, | Nov. 19, 1876 |
| 57 | Oct. 3 | James Smith, | 23 | C. c. fract. leg, " " | " " " | " | " | Jan. 11, 1877 |
| 58 | " 29 | George Howe, | 9 | C. c. c. fract. leg, " " | " " " | " | " | Oct. 20, 1876 |
| 59 | " 20 | Pat. McCormick, | 45 | C. c. c. fract. humerus, | Shoulder-joint, | " | Cured, | Feb. 20, 1877 |
| 60 | Nov. 4 | George Gallagher, | 12 | C. c. fract. metatarsus, | Leg, | " | " | Nov. 29, 1876 |
| 61 | " 16 | William Lehman, | 22 | C. c. c. fract. leg, railroad accident, | " | " | " | March 8, 1877 |
| 62 | " 27 | Ed. Brannagan, | 24 | C. c. fract. leg, " " | Thigh, lower 3d, | " | " | " 3, 1877 |
| 63 | Dec. 14 | Michael O'Neill, | 28 | Necrosis of tibia, | " " " | ..... | " | " 28, 1877 |
| 64 | " 20 | John McFall, | 22 | C. and l. wound of hand, | Forearm, | Immediate, | Died, | June 11, 1877 |

| No. | Admission. | Name. | Age | Disease or injury. | Part amputated. | Immediate or otherwise. | Result. | Period of discharge, or death. |
|---|---|---|---|---|---|---|---|---|
| | 1877. | | | | | | | |
| 65 | Jan. 22 | Jesse Muller, | 27 | C. and l. wound of arm, | Shoulder-joint, | Immediate, | Died, | Feb. 16, 1877 |
| 66 | Feb. 6 | Andrew Rabbitt, | 35 | Fract. olecranon, wound forearm, | Arm, | " | Cured, | April 26, 1877 |
| 67 | " 9 | John Nolan, | 18 | C. fract. tibia, | Thigh, | " | Died, | March 25, 1877 |
| 68 | April 30 | Rachel Reill, | 31 | C. c. fract. leg and thigh, railroad accident, | Hip-joint, | " | " | April 30, 1877 |
| 69 | May 12 | M. G. Kelly, | 25 | C. c. fract. forearm, | Arm, | " | Cured, | June 10. 1877 |
| 70 | " 17 | William Reach, | 25 | C. fract. foot, railroad accident, | Leg, | " | " | " 27, 1877 |
| 71 | July 19 | Tim. Creedin, | 50 | C. fract. thigh and leg, railroad accident, | Thigh, middle 3d, | " | " | Oct. 4, 1877 |
| 72 | Aug. 15 | M. Dembinsky, | 40 | C. fract. metatarsus, | Pirogoff's, | " | " | Feb. 1, 1878 |
| 73 | " 28 | Pat. Good, | 11 | C. and l. wound foot, | " | " | " | Nov. 8, 1877 |
| 74 | Sept. 18 | James Buck, | 25 | C. c. fract. metacarpus, | Forearm, | " | " | Oct. 22, 1877 |
| | 1878. | | | | | | | |
| 75 | Jan. 15 | John Reegan, | 18 | Necrosis of tibia, | Leg, | ..... | Died, | Feb. 19, 1878 |
| 76 | Feb. 22 | Herman Polster, | 29 | Erosion cartilages ankle-joint, | " | ..... | Cured, | June 3, 1878 |
| 77 | March 1 | Peter Henderson, | 55 | C. c. c. fract. leg and foot, railroad accid. | Thigh, lower 3d, | Immediate, | " | May 2, 1878 |
| 78 | " 21 | Thomas Collins, | 17 | C. c. c. fract. leg, railroad accident, | " " " | " | " | Aug. 10, 1878 |
| 79 | July 9 | Wilhelmina Reim, | 32 | Chronic arthritis knee-joint, | " " " | ..... | " | Sept. 23, 1878 |
| 80 | Aug. 13 | James Murphy, | 35 | C. c. fract. leg, railroad accident, | " " " | Immediate, | " | Oct. 27, 1878 |
| 81 | " 21 | James Blaney, | 60 | C. and l. wound wrist-joint, | Forearm, | " | " | Oct. 26, 1878 |
| 82 | Oct. 24 | Paul Commerford, | 22 | C. and l. wound foot, railroad accident, | Leg, | " | " | Dec. 15, 1878 |
| 83 | Nov. 8 | John Shelly, | 38 | C. c. c. fract. forearm, | Forearm, | " | " | " 1, 1878 |
| 84 | " 12 | Thomas Smith, | 26 | C. fract. metatarsus, | Leg, | " | " | " 15, 1878 |
| 85 | Dec. 23 | Tim. Lynch, | 23 | C. fract. forearm, | Arm, | " | " | Jan. 25, 1879 |
| | 1879. | | | | | | | |
| 86 | Jan. 16 | Cyrus Boyce, | 29 | C. c. fract. arm, | Arm, | Immediate, | " | Feb. 22, 1879 |
| 87 | " 30 | Thomas Connell, | 21 | C. c. fract. thigh, railroad accident, | Thigh, middle 3d, | " | Died, | Jan. 31, 1879 |
| 88 | May 2 | Charles McDonald, | 45 | Erosion cartilages ankle-joint, | Leg, | ..... | " | June 12, 1879 |
| 89 | July 3 | Mich. Maloney, | 36 | C. c. fract. leg, railroad accident, | Thigh, lower 3d, | Immediate, | Cured, | Aug. 14, 1879 |
| 90 | Aug. 12 | Mark Fallon, | 15 | Lac. wound of knee, | " " " | ..... | " | Jan. 30, 1880 |
| 91 | Oct. 31 | David Sharratt, | 33 | C. and l. wound of arm, | Shoulder-joint, | Immediate, | Died, | Nov. 11, 1879 |
| | 1880. | | | | | | | |
| 92 | Feb. 2 | Wm. Coughlin, | 22 | C. c. fract. leg, railroad accident, | Thigh, lower 3d, | " | " | March 5, 1880 |
| 93 | March 9 | Wm. Bratton, | 23 | C. fract. arm, | Arm, | " | Cured, | April 18, 1880 |
| 94 | Sept. 6 | James Leary, | 30 | C. fract. elbow-joint, | " | " | " | Dec. 18, 1880 |
| 95 | Oct. 23 | John Riley, | 35 | C. c. fract. leg, railroad accident, | Thigh, lower 3d, | " | Died, | " 18, 1880 |

*Summary.*

| | Cases. | Cured. | Died. |
|---|---|---|---|
| Immediate operation | 75 | 44 | 31 |
| Secondary operation | 20 | 9 | 11 |
| | 95 | 53 | 42 |
| **Amputation.** | | | |
| Thigh | 38 | 19 | 19 |
| Leg | 15 | 8 | 7 |
| Arm | 15 | 8 | 7 |
| Forearm | 14 | 12 | 2 |
| Knee-joint | 3 | ... | 3 |
| Shoulder-joint | 3 | 1 | 2 |
| Pirogoff's | 3 | 3 | ... |
| Syme's | 1 | 1 | ... |
| Hip-joint | 2 | ... | 2 |
| Foot | 1 | 1 | ... |
| | 95 | 53 | 42 |

*Treatment.*—Prior to December, 1876, the treatment was by closing the stump by means of sutures and adhesive straps, and light external dressing of lint or oakum, confined with a bandage of sufficient firmness to prevent muscular twitching and retain the dressing.

Up to this period there occurred 62 cases, of which 30 recovered and 32 died, viz.:—

| Amputation. | Cases. | Cured. | Died. |
|---|---|---|---|
| Thigh | 26 | 11 | 15 |
| Syme's | 1 | 1 | ... |
| Pirogoff's | 1 | 1 | ... |
| Arm | 9 | 2 | 7 |
| Leg | 9 | 4 | 5 |
| Forearm | 10 | 9 | 1 |
| Hip-joint | 1 | ... | 1 |
| Foot | 1 | 1 | ... |
| Knee-joint | 3 | ... | 3 |
| Shoulder-joint | 1 | 1 | ... |
| | 62 | 30 | 32 |

Since that time a change has taken place in the management of the stump; and the *open* substituted for the *closed* method, and the use of antiseptics: viz., Listerism, thymol, potass. permanganate, and acid. carbolic. in solution, or combined with vaseline, has been resorted to, and with the most gratifying results.

From the period last named up to this date (January, 1881) there occurred 33 cases, of which 23 were cured and 10 died, viz.:—

| Amputation. | Cases. | Cured. | Died. |
|---|---|---|---|
| Thigh | 12 | 8 | 4 |
| Forearm | 4 | 3 | 1 |
| Arm | 6 | 6 | ... |
| Hip-joint | 1 | ... | 1 |
| Shoulder-joint | 2 | ... | 2 |
| Leg | 6 | 4 | 2 |
| Pirogoff's | 2 | 2 | ... |
| | 33 | 23 | 10 |

Twenty-one of these were treated by the *open* method, of which 15 were cured and 6 died: viz., hip-joint 1, thigh 10, leg 5, arm 3, forearm 2; total 21.

The antiseptics used in these cases were as follows:—

| | Cases. | Cured. | Died. |
|---|---|---|---|
| Potass. permanganate | 6 | 4 | 2 |
| Carbolic acid | 5 | 3 | 2 |
| Thymol | 8 | 7 | 1 |
| No antiseptic | 2 | 1 | 1 |
| | 21 | 15 | 6 |
| Lister's method | 6 | 5 | 1 |

viz.: thigh 2, leg 1, arm 2, forearm 1; total 6.

To these may be added one amputation of the forearm, performed a few days before the close of the year. The patient is still under treatment.

I am aware that the number of cases is too limited to establish definitely the comparative merits of the two systems of treatment (open and Lister's); but I furnish the facts for what they are worth, in the hope that future investigation may perfect a system of treatment which shall obviate to the greatest degree the evil consequences often following major amputations.

The ages of those operated on were as follows:—

| | Cases. | Cured. | Died. |
|---|---|---|---|
| Under 10 | 2 | ... | 2 |
| Between 10 and 20 | 16 | 9 | 7 |
| " 20 " 30 | 40 | 25 | 15 |
| " 30 " 40 | 18 | 8 | 10 |
| " 40 " 50 | 10 | 6 | 4 |
| " 50 " 60 | 6 | 4 | 2 |
| " 60 " 70 | 3 | 1 | 2 |
| | 95 | 53 | 42 |

Of the 95 cases reported, 47 were traumatisms, the result of railroad accidents.

In those of the lower extremity, the limb as a rule was crushed by passing trains, and a large majority of those of the upper extremity by the coupling of cars.

The gravity of the first-named class of injuries will be seen by a reference to the preceding table.

In addition to the suddenness and violence of the shock, and the apparent crushing and laceration of the parts, the injury to the soft tissues often far exceeds what is manifest to the eye, although the integument may to all appearance be sound and free from injury.

A recognition of these facts has led to the practice, in amputations, of giving the seat of injury "*a wide berth*," especially as relates to the lower extremity.

In those cases where the injury extends above the lower third of the leg, the rule is to amputate above the knee.

This may seem somewhat heretical, but the pulpification of the muscular tissue, the presence of coagula underlying the deep-seated muscles, and as I have frequently seen them extending from the seat of injury to the popliteal space, and the inevitable sequence of sloughing and extensive suppuration of the parts, too often followed in turn by septicæmia and pyæmia, are sufficient arguments, to my mind, to put a large joint between the point of operation and seat of injury.

The practice of the hospital has been eminently conservative, and amputation only resorted to when it became manifest that the limb was hopelessly injured.

In open stumps there sometimes exists, especially in muscular subjects, a strong tendency to retraction of the flaps. This is to be counteracted by the application of extension after Buck's method in cases of fracture of the thigh. The straps are to be applied on the anterior and posterior aspects of the limb, and are further utilized as granulation progresses, by pinning the two together, thereby approximating the flaps. By this method the dressing may be renewed, and the wound thoroughly cleansed without any inconvenience to the patient.

During the period embraced in this report, no accident has occurred from the use of anæsthetics: Ether, and Bader's formula, viz., alcohol 1 part, chloroform 2 parts, ether 3 parts, being the anæsthetics employed.

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## ARTICLE XIV.

### INTESTINAL HEMORRHAGE AND ITS PROGNOSTIC SIGNIFICANCE IN TYPHOID FEVER. By M. B. HARTZELL, M.D., of Philadelphia.

AMONG the many accidents which may occur during the course of typhoid fever, intestinal hemorrhage is not very unusual. According to Bamberger, typhoid fever is, after dysentery, the most frequent cause of hemorrhage from the bowels.

Induced by the great diversity of opinion among authors concerning this complication, I have carefully analyzed a considerable number of cases with regard to the various circumstances under which it may occur; and more especially as to the influence which it exerts upon the prognosis, as this is the point upon which authorities differ most widely.

The hemorrhage may take place from the capillaries of the intestine without rupture of their walls, or it may proceed from an eroded vessel traversing the ulcers which constitute one of the pathologico-anatomical features of typhoid. It most likely happens in the first-mentioned way when it occurs at an early period in the disease, as the ulcerations have not then advanced far enough to produce a solution of continuity in the arteries supplying the intestinal mucous membrane. That large hemorrhage may occur without a rupture of the vessels is strikingly illustrated by a case reported by Markwald, in which a profuse intestinal hemorrhage occurred during the course of an attack of typhoid fever; at the post-mortem examination ulcerations were found, but upon injecting the vessels of the intestine with coloured fluid not a drop escaped to indicate the presence of a rupture.

In 5164 cases of typhoid fever which I have collected from various sources, intestinal bleeding happened 331 times, or in 6.4 per cent.; this corresponds very nearly with the percentage given by late writers; Liebermeister[1] puts the frequency of its occurrence at 7.3 per cent.; Griesinger at 5.3 per cent.

As to the time of its appearance it is most apt to happen during the second and third weeks of the attack. Of 187 cases examined with regard to the time of the hemorrhage, it was found to occur—

| | | | |
|---|---|---|---|
| 11 | times | in the | first week. |
| 55 | " | " | second " |
| 61 | " | " | third " |
| 41 | " | " | fourth " |
| 15 | " | " | fifth " |

while 4 cases occurred at a still later period; 81.9 per cent. of the whole number occurring in the second and third weeks.

It is worthy of remark that constipation exists much more frequently in the cases complicated by hemorrhage than in those running their course unaccompanied by this complication. In 60 cases noted by Murchison,[2] constipation existed 8 times; while in 89 cases which I have collected, this symptom was present 15 times, or in 16.8 per cent. It is very probable that the masses of hardened feces, by the pressure which they must exert upon the bowel in their passage through it, irritate the ulcerated mucous membrane and thus favour the occurrence of bleeding; this would in part explain the connection which seems to exist between these two symptoms.

[1] Ziemssen's Cyclopædia, vol. i. p. 147.

[2] Continued Fevers.

Sex seems to have no effect upon the frequency of the occurrence of the hemorrhage; in 42 cases 23 were males, 19 females.

In children typhoid fever is accompanied very infrequently by this complication; in 264 cases, occurring in children, hemorrhage was present but 5 times, or in 1.9 per cent., which is very much below the average frequency in adults.

The fact that there has been one hemorrhage makes it very probable that it will be repeated. In 11 out of 18 cases, or in 61 per cent., hemorrhage occurred several times; it is this repetition of the bleeding which is to be feared rather than an immediately fatal effect from a single hemorrhage.

While most authors, among them Louis, Jenner, Murchison, and Niemeyer, agree in attributing a grave significance to the appearance of entrorrhagia, such trustworthy observers as Stokes, Graves, Trousseau, and Flint, do not consider that it is of very grave import; indeed, according to Stokes,[1] "it may sometimes be regarded as to some extent a critical phenomenon, and it often produces a beneficial and curative effect, lessening the local determination and irritation," while Trousseau declares, "that hemorrhages in typhoid fever, so far from possessing the character of danger imputed to them, are usually of favourable augury."[2]

A careful examination of statistics, however, must lead to the conclusion that the presence of this complication influences the prognosis unfavourably. Opinions founded upon a limited number of cases cannot be taken as conclusive; it is only by examining a large number that we are enabled to arrive at a trustworthy conclusion.

In 60 cases of typhoid fever accompanied by hemorrhage, Murchison had 32 deaths, or 53.3 per cent.; but this is by no means to be taken as representing the gravity of this symptom, for 11 of these 32 died of peritonitis. Ragaine in 115 cases did not have a single death. It is very evident that any conclusion as to the fatality of intestinal hemorrhage, drawn from either of these two series, would be utterly worthless. In 127 cases Liebermeister found the mortality to be 38.6 per cent. Of 333 cases which I have analyzed there were one hundred and thirty-four deaths, or 40.2 per cent., which may be taken as fairly representing the mortality of this complication.

That astonishingly large quantities of blood may be lost without unfavourably influencing the course of the disease is known to every observer, and was well shown in a case of my own which I will here briefly sketch.

C. M., a locomotive fireman, 34 years of age, of robust frame and temperate habits, was taken ill with typhoid fever which quickly assumed a very unfavourable aspect; the temperature was continuously high, varying from 104.6° to 105°, with no morning remissions; there was active

[1] Lectures on Fever.

[2] Clinical Medicine, vol. i.

delirium and subsultus; the bowels were obstinately constipated. On the evening of the ninth day there was a profuse hemorrhage, ascertained by subsequent measurement to amount to three pints; this was followed by all the symptoms of profound anæmia—almost complete extinction of the radial pulse, profuse perspiration, restlessness, nausea, etc.; the temperature rapidly declined, falling more than 4° in five hours; within the next forty-eight hours the temperature reached 105.6°, but, as was not the case before the hemorrhage, it was quickly reduced by the use of antipyretics —sodii salicylat. principally; indeed, the hemorrhage seemed to have favourably influenced the obstinate character of the fever, making it much more amenable to treatment. There was no repetition of the bleeding, and the case progressed toward recovery without any other noteworthy symptom except the obstinate constipation, which persisted throughout the attack.

Although a digression, I wish here, on account of its success, to call attention to the manner in which the sodium salicylate was administered in this case. Taking advantage of the fact that the normal tendency of fever is to decline during the night, the drug was given exclusively at this time. By adopting this method, giving from 120 to 160 grains between 6 P. M. and 6 A. M., a morning remission of three and a half to five degrees was always obtained, and the evening rise notably diminished. In order to test its effect more thoroughly, the salicylate was omitted at various times; upon these occasions there was either no morning remission at all, or but a slight one of one-half to one degree. I am well convinced that, unless there is some special contraindication, this is the proper method to be pursued when we wish to obtain as great a reduction of the fever as possible, for I have never been able to produce such great falls in temperature by giving the antipyretic continuously through the twenty-four hours.

A careful analysis of the cases examined leads to the conclusion that the hemorrhage, if not inordinately large nor repeated, does not materially affect the prognosis in robust subjects; but, as I have indicated above, the bleeding is repeated in the majority of cases; it is this tendency to recurrence that makes entrorrhagia in typhoid fever a symptom of unfavourable omen.

Furthermore, from the large proportion of deaths from peritonitis in the sixty cases recorded by Murchison, it would appear that cases accompanied by hemorrhage are much more apt to suffer from perforation of the bowel, the chief cause of peritonitis in typhoid fever; not because of the bleeding, but because the ulcerative process is much more severe in such cases, especially in those suffering from the hemorrhage late in the disease when the bleeding proceeds from a ruptured vessel. However, the number of cases is too small to draw a positive conclusion from with regard to this point.

When the intestinal hemorrhage is accompanied by bleeding from the gums, genital organs, and into the subcutaneous tissue, it is a symptom of the most serious significance, indicating a speedily fatal termination; it is then due to a profound alteration of the walls of the capillaries and of the

blood itself; the hemorrhage from the bowels is then only one manifestation of a general hemorrhagic tendency, a complete disorganization of the blood.

To conclude, while in some instances a hemorrhage from the intestines may seem to ameliorate the condition of the patient, this is not the rule; but, on the contrary, this symptom is to be looked upon as decidedly unfavourable, for in typhoid fever the total mortality is about 18 per cent.; in cases complicated by hemorrhage it is over 40 per cent., thus proving conclusively the unfavourable character of the complication; and the contrary opinion held by the distinguished authors quoted is only to be explained upon the ground that it was based upon an insufficient number of cases.

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## ARTICLE XV.

## AN UNDESCRIBED SOURCE OF DANGER IN OVARIOTOMY. By T. M. DRYSDALE, M.D., of Philadelphia.

N. A., an unmarried lady, thirty years of age, was sent to me by Dr. H. S. Lucas, of Chester, Mass., January 6, 1880. She was of medium size, rather emaciated and pale, but cheerful. She gave me the following history: Her general health had been uniformly good, but she had never been strong. Her father was living and in good health; her mother had recently died from cancer of the uterus.

She had first menstruated when twelve years old, with violent cramps and copious flow. She has suffered greatly at her periods ever since, the pain occurring after the commencement of the flow. She menstruates regularly, with a profuse discharge accompanied by clots. The flow lasts from four to nine days, and has not increased since she discovered the tumour.

Four years ago she first noticed a bloating of the whole abdomen. It seemed to protrude, from the first, at the centre, and did not start from either side. Two years since, while nursing a sick sister, she had been much on her feet, which had caused the swelling to increase rapidly and become very prominent. The abdomen has enlarged slowly ever since that time, projecting most in the centre near the umbilicus.

She had consulted many physicians who had agreed in considering her disease as ascites. Dr. Lucas, however, on examining her had pronounced it ovarian dropsy. She had taken great quantities of medicine, such as elaterium, etc., which had injured her general health.

I found the abdomen occupied by a soft, movable, elastic tumour with smooth walls, which reached as high as three inches above the umbilicus. It was dull on percussion and vibrated, but did not fluctuate distinctly. The abdomen above the tumour was resonant on percussion, and there was resonance along the right border of the mass, but along the left it was dull.

The upper part of the pelvis was occupied by the tumour, which pushed the uterus downwards and to the right. The uterine sound entered four inches, and when inserted was not much affected by motion given the

tumour. I diagnosed a unilocular ovarian cyst, and confirmed the diagnosis by emptying the cyst completely by means of the aspirator, obtaining a gallon of fluid resembling thin boiled starch in colour and general appearance. This fluid became more opaque when boiled, but no coagulum was formed. Examination by the microscope showed ovarian cells present in great abundance.

The patient had to leave the city unexpectedly, thirty hours after the aspiration, and make the long and fatiguing journey to her home, but no unpleasant result followed the effort. As soon as she was certain that she had an ovarian tumour she became urgent to have it removed at once, although I advised her to wait until the cyst filled again. For certain reasons she would not consent to the delay.

Accompanied by my son, I visited her in Chester, Mass., and operated, January 28, in the presence of Dr. Hutchison, of Huntington, Drs. Fay and Fisk, of Chester, Dr. Stebbins, of Springfield, Dr. Paddock, of Pittsfield, Dr. Leroy McLean and Mr. H. O. R. Tucker, of Troy, New York. Drs. McLean and Paddock were my principal assistants, and Dr. Lucas gave the anæsthetic.

Under the carbolized spray, an incision about three inches in length was made, midway between the umbilicus and pubis, and carried directly down to the peritoneum. A vessel in the abdominal wall bled freely, but was secured by the hæmostatic forceps. On incising the peritoneum, the omentum presented itself at the wound, and on raising it a loop of intestine followed.

Passing two fingers downwards, I reached the cyst, which lay deep in the pelvis beneath the intestines, and drew it up and secured it by means of the cyst forceps. Finding it free from adhesions I attempted to draw it through the incision, but it was too large. A trocar was thrust into it, and as the fluid escaped the cyst-wall collapsed, and when a sufficient quantity of fluid had been removed the tumour yielded to gentle traction, and came through the small wound without difficulty.

It proved to be a cyst of the left ovary. The pedicle, which was long, was secured by a clamp, and the wound completely closed around the pedicle with three metallic sutures. The usual antiseptic dressings were applied to the wound, and the whole secured by a flannel roller. The patient recovered without an unpleasant symptom, her pulse never reaching beyond eighty-five, nor her temperature beyond ninety-nine degrees.

Among the points of interest presented by this case, one is the absence of distinct fluctuation. Considering the character of the fluid, this was certainly unusual, and led to a doubt, in the minds of some physicians who had examined her, as to the nature of the disease.

The unusual difficulty met with in the operation, however, was the most interesting feature in the case. In performing ovariotomy, we generally find the abdomen occupied by a mass, which, by its presence, gives prominence to the abdominal wall and displaces the viscera which naturally occupy the front part of the abdominal cavity. An incision made through the abdominal wall and peritoneum, all treatises upon ovariotomy agree, brings us directly in contact with its white, pearly surface. But it was not so in this case. The urgency of the patient, having induced the removal of the cyst before it had time to become again distended with fluid,

created a difficulty which is unusual, and which is not alluded to in works on this subject.

In examining the abdomen just before operating I found it everywhere resonant, and could detect no tumour by the touch through the abdominal wall. The tumour had retreated into the pelvis. My incision, therefore, was carried directly down upon the intestines, and called for a greater amount of caution to avoid wounding them than is usually required in ovariotomy; for even after tapping, the adhesions, or the bulk of the cyst-wall, generally cause the tumour, at least partially, to retain its old position in the abdominal cavity, merely collapsing and diminishing in size.

This entire retreat of the tumour into the pelvis is, therefore, unusual, and can only occur when the cyst has been thoroughly emptied, is of moderate size, or has a very thin wall free from adhesions.

To an experienced and careful surgeon this complication may seem unimportant. To a novice, however, in the operation, who is necessarily guided mainly by what he has read upon the subject, and will, therefore, expect to see the tumour as soon as the abdominal wall is divided, the knowledge that such a complication may be met with is of great value. It may save the risk of wounding the intestines, and the embarrassment of seeking for a tumour which, before tapping, had distended the abdomen, and was only to be found, after a prolonged search, hid in the pelvis.

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## ARTICLE XVI.

### A CASE OF NEUROPATHIC PARALYSIS OF THE ABDUCTOR MUSCLES OF THE GLOTTIS, OCCURRING DURING CHILDHOOD. TRACHEOTOMY TUBE WORN FOR THIRTY-TWO YEARS. DR. HORACE GREEN'S EXPERIMENTS. REMARKS.

By GEORGE M. LEFFERTS, M.D., Clinical Professor of Laryngoscopy and Diseases of the Throat in the College of Physicians and Surgeons, N. Y.; Consulting Laryngoscopic Surgeon to St. Luke's Hospital, New York, etc.

I HAVE recently had under my care a case which presented so many interesting features, some hardly reconcilable with our present ideas concerning certain pathological conditions of the larynx, others which overthrow important conclusions promulgated in the past, and adopted as facts, and some which are, to me at least, new, that I judge it to be of sufficient clinical value to communicate to others.

An intelligent Irishwoman, of spare habit and nervous temperament, aged forty-four, consulted me as to the question of dispensing with the use of a tracheotomy tube, which she was wearing. Her clinical history dated back thirty-three years. At this time, she then being ten years of age, a heavy cold was contracted, evidently a severe attack of bronchitis and laryngitis, which was followed, ere she had fully recovered from its effects,

by the formation of two large indurated masses, with acute inflammatory symptoms, over the right side of the neck, in the neighbourhood of the sterno-cleido-mastoid muscle. They grew rapidly, and finally broke and discharged a large amount of sloughy material and tissue, leaving deep and extensive scars, which she still bears.

During the progress of the swellings (glandular) dyspnœa first manifested itself, and so progressively increased that, seven months later, the child's laboured and stridulous breathing attracted common attention, especially during the night, and finally became so urgent, the patient meanwhile losing flesh and strength, that tracheotomy was performed *in extremis* two months later, at the Brunswick Street Hospital, Dublin, under the care of Drs. Hutton and Adams.

Six months now elapsing, she was able to leave the Hospital, still, however, wearing the tube, which she was unable to dispense with, not being able to breathe when its opening was occluded by the finger. At the age of sixteen she emigrated to America, and two years later, her condition being unchanged, she came under the professional care of Dr. Horace Green.

The interest attaching to the case seems to have attracted his earnest attention, and the peculiar conditions existing at the time afforded an unusual opportunity, of which he, with his well-known zeal, was not slow to avail himself, of verifying certain investigations and conclusions, now matters of history, upon which he was then engaged and strongly advocating, as to the possibility of passing an instrument between and below the vocal cords. I find in one of his earlier essays, among "a series of proofs, that cannot be set aside, to establish most conclusively the positive performance of this operation," the following reference to this case, which I give in his own words:—

"I have had recently under my care, a young woman upon whom the operation of tracheotomy was performed several years ago. An opening into the trachea, just above the top of the sternum, has remained ever since. But the opening being quite small, and passing obliquely into the trachea, it is impossible to see into this tube. This patient was under my care for chronic pharyngo-laryngeal inflammation, for which she was successfully treated by topical medication.

"As this appeared to be an excellent case to prove the practicability of the operation in question, for the patient breathed much of the time through the larynx, I determined to make the attempt to pass the sponge-probang through the trachea to the opening.

"To prove its presence at this point (for it could not be seen through the small, oblique opening) my assistant, Dr. Richards, took a small wire of German silver, and passing the bent wire into the opening, sufficient to have it just penetrate into the trachea, retained it there, while I passed the sponge probang, wet with the nitrate of silver solution, quickly down the trachea upon the bent wire. The meeting of the sponge with the wire was plainly felt, and, on withdrawing the latter, it was blackened by its contact with the caustic. This operation was repeated a number of times in the presence of several physicians, and with the same result."

This account corresponds, in all its details, with the story of the patient, who adds that the sponge probang, which at first could not be passed, owing to the severe laryngeal spasm that it caused, and only succeeding after many trials and persistent training, was felt, judging from her sensations, just at the point indicated by the doctor. In just how far these

sensations were reliable, will appear in a moment. During the past twenty-six years, that is, since her arrival in this country, she has entirely dispensed with the use of the tracheotomy tube on several occasions, and for periods varying from one day to, on one occasion, over two weeks, but in each instance has become frightened, perhaps needlessly, at the embarrassment in respiration, and has replaced it. For months at a time, she has worn a plug in the tube during the day, and suffered no inconvenience, except when excited or undergoing unusual exertion, or when the desire for air became imperative, and necessitated its removal. Neither voice nor respiration, the tube being closed, have been or are such as to attract attention, and no examination of the larynx ever having been made, even since the date of the introduction of the laryngoscope into the diagnostic *armamentarium* (until my own), the use of a tracheal tube has, on more than one occasion, been deemed unnecessary, and a plastic operation proposed to close the wound in the trachea, but always declined by the patient, who, notwithstanding her desire to rid herself of it, had often learned from experience its necessity, and refused to submit to the theoretical *dictum* of the doctors in the matter.

Of late years she has passed from medical notice; has worn her tube uncomplainingly and constantly, gradually reducing its size, as the contraction of the cicatrized edges of the wound demanded, and led an active and even laborious life, until she came to me, asking the question with which this history opens.

My first impulse as the patient sat before me, breathing and speaking quietly, her hand and finger raised to her neck, as she closed the opening of the small tube, alone showing me that she wore one, was to agree with those who had recommended its removal. A glance at the condition of the larynx as revealed in the laryngoscopic mirror, however, proved its utility and permanent necessity. In an otherwise perfectly normal larynx, all proper physiological movement of the vocal cords was in abeyance, for, fixed and immovable in the median line of the larynx, a narrow chink alone representing the rima glottidis remained between them and was unaltered by inspiratory effort; the vocal cords at this time flattening somewhat, but not being abducted one from the other, in the slightest degree.

During phonatory effort adduction, as far as space permitted, took place, but feebly, and the column of air found its way through the narrow opening between the cords just alluded to, and threw their free edges into vibration in a manner, though not normal, yet sufficiently perfect to produce a clear voice of some force, but one, if its manner of production be closely studied, attended at times by forced expiration especially after prolonged speaking, giving it a somewhat spasmodic character. The tracheal wound is located at about the fourth to fifth ring, is small, surrounded by dense cicatricial tissue, and passes obliquely to the left into the trachea. The surrounding parts have been displaced by cicatricial contraction. The silver tube which she now wears is the size of the smallest of the series of hard rubber tubes (7 mm.), is single, and not more than one inch in length, slightly curved; it does not, therefore, reach more than a short distance into the trachea.

The other physical conditions have been alluded to elsewhere, and need not be repeated here.

My opinion, based upon a careful study and examination of the case, was that she must continue to wear the tube; that its use could not be dispensed with without danger, and that the laryngeal conditions were irre-

mediable. I have seen the case many times since my first examination, but have found no reason to change my views.

*Remarks.*—I have alluded to the case as possessing some unusual and peculiar features; among these I include the length of time that a tube has been worn, and this without local irritation or trouble to the patient; a fact which goes to refute some of the statements made by Petel, Carrié, Körte, and others, as to the dangers incurred by the prolonged presence of a tube within the trachea. Again, the excellent character of the voice is unusual; for, though experience has amply proven that, curiously enough the voice is but little affected in the disease under consideration, it is seldom that it presents such almost complete immunity from change as in this instance, the flow of speech being alone occasionally interrupted by a slightly stridulous inspiration. Still further, instead of "laboured, noisy, and difficult inspiration with frequent urgent dyspnœa," and "great stridor in sleep"—the characteristic symptoms of the disease—our patient goes calmly about with her tube closed, even dispenses with it for a time, and thus refutes both theory and common experience by fact.

As to the nature of the primary lesion and its *modus operandi* in producing the laryngeal conditions heretofore described, I think there can be no doubt. I explain the sequence of events thus: the deep-seated glandular inflammation with subsequent sloughing, which she describes as occurring during her childhood, and of which she still bears the marks, implicated directly the right recurrent laryngeal nerve which lay within its area, and possibly the pneumogastric likewise, thus causing paralysis of the right lateral crico-arytenoid muscle, through involvement of certain fibres of the former nerve supplying this muscle, as is primarily the rule when the nerve trunk is but partially implicated, this assertion being based upon the well-know fact that the conducting function of a nerve is partially or entirely destroyed by pressure, even though this pressure be not followed by atrophy or destruction of the nerve substance.

Paralysis of one muscle being thus directly established, the involvement of its fellow upon the opposite side of the larynx, followed by reflex action or paralysis, as suggested as possible by Johnston, and exemplified in his published case, as well as in those of Bäumler and Cohen, proves, as well as these cases, that a bilateral paralysis of the vocal cords may exist wtih pressure upon one side only. Such cases, it is true, are infrequent, but these here alluded to are sufficient to sustain my point.

The condition of the larynx thus produced in childhood, the period being corroborated by the facts of her clinical history, has continued unchanged throughout years, and exists to-day. If my view of its causation, its date, and my diagnosis of the fact of the laryngeal paralysis existing as described be accepted as true, the interesting question then arises, did Dr. Green ever pass a sponge probang between this woman's vocal cords? if not, one of the best and strongest, apparently one of the most convinc-

ing of the examples brought forward by him in support of his assertions, falls to the ground valueless. I maintain that it was physically impossible to do so in this case, for, aside from the difficulty, well known to all laryngoscopic experts, of passing *any* instrument, even the most delicate, between and below the vocal cords, even with the immense aid afforded by the use of the laryngoscope, an assistance which Dr. Green did not possess, the paralyzed vocal cords fixed in the median line formed here an impassable and elastic barrier which was only rendered still more resistant by direct pressure. But the patient tells us that she felt the sponge in the trachea. Are her sensations reliable? To satisfy myself and to answer this question I performed the following two experiments, after obtaining her permission to do so: I passed a small laryngeal brush (much smaller and by far less clumsy than the old-fashioned sponge probang) into her larynx, guided by its reflection in the laryngeal mirror, so that there was no question as to its entrance into that cavity. At first, firmly grasped by the contraction of the laryngeal walls, the spasm finally gave way, and the brush passed onwards to the vocal cords, where it was firmly arrested, and the strongest pressure allowable failed to cause them to give way in the slightest degree before it. Spasm, choking, and retching following, it was withdrawn. On questioning the patient, she affirmed that the brush had passed into her windpipe, had gone as far as it ever had in Dr. Green's hands, and located the limit of its excursion at a point just above her tube. A second attempt after the lapse of half an hour brought forth the same results, the difficulty of introducing the brush, even with the guidance of the mirror, being greater on account of spasm, and, though greater pressure was exerted on this occasion, the barrier offered by the tightly closed vocal cords did not give way, and, though the brush in point of fact penetrated, pressing the elastic vocal cords before it, somewhat deeper than on the first occasion, the patient informed me that I had not gone as far down as in the first attempt. Her own testimony then, judging from these examples of it, can hardly be regarded as trustworthy. Finally, Dr. Green tells us that the wire introduced through the tracheal wound was discoloured by the silver nitrate, and that therefore the sponge charged with it must have touched it. But is it not possible that the soaked sponge when pressed tightly down upon the vocal cords, and pressed upon likewise by the contracted laryngeal walls, should discharge enough of its contents to pass between the cords and run down the tracheal walls until the wire probe was reached? It seems so to me, but I present the fact with the others that I have detailed for the consideration and judgment of those who with me may be interested in this unusual case.

## ARTICLE XVII.

### RESTORATION OF FUNCTION OF SIGHT IN AN EYE AMBYLOPIC FOR YEARS. BOTH EYES EXHIBITING VARIOUS DISEASES OF THE EYE, WITH TREATMENT. By WILLIAM S. LITTLE, A.M., M.D., of Philadelphia.

IT is rarely the opportunity is afforded of seeing in one patient such a variety of diseases of the eye as the following case exhibits. It presents two of the causes of divergent strabismus depending on the eye alone, the treatment for vitreous opacity in one eye, and an ulcer of the cornea in the other; and the benefit derived from the correction of optical defects existing, and from a tenotomy of the tendon of the external rectus of each eye. The eye upon which vision had depended became useless, and the other eye, which was amblyopic and had undergone the lesions of myopia for years, became the useful eye.

The treatment required therapeutical, surgical, and optical measures. The mechanics of the ocular muscles are also presented.

Mr. W., æt. 33, was seen Sept. 1879, suffering from an ulcer of the cornea of the left eye, and an ambylopic condition of the right eye, vision reduced to counting fingers at two or three feet with both eyes.

He was also annoyed with diplopia resulting from the condition existing. He was led about for fear of accident. General health poor. Myopia prevails in his family, and several members have a divergent strabismus dependent on it.

Further, his right eye has a divergent squint and has been useless since early childhood; his left eye is near-sighted, and he has been compelled to wear glasses since a boy. In Oct. 1863, while in the army, a powder-magazine exploded near him, rendering him unconscious for three days, no injury to external parts, sight and hearing affected for a few days, remained in hospital for three months; sight and hearing became as good as they were before the explosion. The external rectus of right eye was divided in 1873, with no permanent result, the vision of the eye being so defective; no correction was given to his optical defect. In July, 1879, eight weeks prior to consulting me, a solution of ammonia, F. F., accidentally got in the conjunctival sac of the left eye, the one upon which vision depended, setting up a severe kerato-conjunctivitis, and destroying a portion of the cornea to the inner and lower quadrant, penetrating to almost the middle of the thickness of the cornea. Zinc and lead-water were used; vision was reduced to perception of light in the eye, and with the chronic conditions in the right eye he was reduced to almost blindness for a time. While the left eye was suffering from the acute conditions, he observed in a few weeks that he could begin to perceive objects with the right eye, and it gradually improved; the left eye still remained very irritable, and assumed the condition of ulcer of the cornea. With the return of function of sight to the right eye he was annoyed with diplopia, and when the left eye was closed he could not depend on the right eye.

On examination, the right eye presented a wide divergent squint, no ability to turn it inwards; to see directly in front he had to turn his head to

the left. Ophthalmoscope showed a myopia of one-fifth with myopic astigmatism; a posterior staphyloma, the disc, and staphyloma had the appearance of a double disc overlapping slightly and reaching toward the fovea. A large vitreous opacity also existed towards nasal side; the loss of field of vision corresponded principally to the opacity: when it passed before the fovea he was rendered momentarily blind; it presented the lesions found so frequently with uncorrected myopia. The left eye presented a loss of substance of the cornea at the lower and inner quadrant with ragged ulcerative edges, bloodvessels running into it from the conjunctiva; general opacity existed over the whole cornea; no iritis had occurred; the lachrymal sac had also been invaded with the solution of ammonia. There was profuse lachrymation, pain, and photophobia.

The treatment began by correcting the optical defect for the right eye, as, by forced use, it had commenced to perform its function — $V = \frac{2}{C}$. I ordered a — 5⊂ — 24cyl ax 45° $V = \frac{15}{XL}$.

The eye was to be treated with atropia, and for the vitreous opacity, I gave internally potassium iodid. and hydrarg. bichlor.

For the left eye I ordered hot water applications and atropia, and an ointment of yellow oxide of mercury. As vision improved the diplopia became more annoying; on Oct. 13, I divided the tendon of the external rectus of the right eye.

*Oct.* 15. Right eye in position $V = \frac{15}{XXX}$; vitreous opacity smaller; the fog, he said, seemed to be disappearing, and was not so constant.

22*d*. Left eye with a — 8 $V = \frac{15}{LXX}$.

25*th*. Used eserine for left eye, instead of atropia.

*Nov.* 1. R E, $V = \frac{15}{XXX}$; L E, $V = \frac{15}{L}$.

As vision improved in each eye, he using the right principally, the left began to deviate to the outer canthus.

*Jan.* 26, 1880. R E, $V = \frac{15}{XV}$; L E, $V = \frac{\cdot 15}{XXX}$; pupil dilated.

The cornea had filled up considerably, and what opacity was present was largely due to the lead that was used while the epithelium of the cornea was denuded.

Right eye showed few shreds of vitreous opacity, not so migratory, and not annoying.

He walks alone, reads and writes with right eye. It was interesting to watch the progress of restoration of function of sight in the right eye; he said he had to learn all over again to judge of place, distance, and relation of objects to each other with the right eye; and finally, he was able to shave, which was the most difficult thing for him to learn. It was as difficult for him to train the right eye as it would have been if he had lost a right hand, and had to train a left one to do the work.

*March* 26. R E, $V = \frac{15}{XV}$; L E, $V = \frac{15}{XXX}$; treated continually.

*April* 9, 1880. While holding the eye clinic at the Jefferson Medical College Hospital, during the spring and summer course, I divided the tendon of the external rectus of the left eye to remove the divergence that

followed as the result of the opaque cornea with the myopia existing. The result was satisfactory; with a dilated pupil he can control objects singly.

*Oct.* 1880. I find patient in a good condition, able to attend to work, but depending on his right eye for full and effective vision; he is able to control single vision by an effort, but has slight diplopia at times; with a dilated pupil of the left eye, so as to avoid the opacity, it then disappears.

The cause of the divergence of the right eye was due to the myopia, that of the left to the opacity of the cornea, along with the existing myopia. The vitreous opacity in the right eye may have had some influence on the divergence of the eye; but the divergence, no doubt, antedated the opacity.

No. 219 SOUTH SEVENTEENTH STREET, Oct. 8, 1880.

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## ARTICLE XVIII.

### CONSECUTIVE LIGATION OF THE COMMON CAROTID AND SUBCLAVIAN ARTERIES FOR SUPPOSED ANEURISM OF THE INNOMINATE. AUTOPSY THREE YEARS AFTER THE LAST OPERATION.

By LEWIS A. STIMSON, M.D., Surgeon to the Presbyterian and Bellevue Hospitals, New York.

IN the Wood Museum, Bellevue Hospital, New York, is a preparation made from the body of a man whose right common carotid and subclavian arteries had been tied, the one four years, the other more than three years, before his death. The preparation was made with the special object of showing the collateral circulation, and as such is believed to be unique of its kind. The dissection was not carried far enough to clearly show the condition of the aorta and innominate, and Prof. Wood, while appreciating fully the importance of a knowledge of the condition of those vessels, feared that any attempt to ascertain it after the preparation had become dry might break the injected arterial branches. Quite recently, however, he has directed a more complete dissection to be made, and, as autopsies made months or years after operations of this kind are few in number and important to the formation of a correct opinion concerning the value of the operation, I desire to place this one upon record. The case is one referred to in an article by myself on "Simultaneous ligation of the carotid and subclavian arteries," published in the *American Journal of the Medical Sciences*, July, 1880, note on page 68, and is no. XXV. in Dr. Wyeth's list of "Cases of distal ligature for aneurism near the heart," published in the same journal, January, 1881.

The patient, Peter M., 48 years of age at the time of his death, noticed in Oct. 1875, a small lump in his neck above the inner end of the right clavicle; it increased within a week to the size of a hickory-nut, and Nov. 1, 1875, the carotid was tied by Dr. Doughty at the Homœopathic Hospital. A copy of a description of the operation, furnished by Dr. D., forms part of the record of the case made during the patient's subsequent stay in

Bellevue Hospital. The vessel was reached by a V-shaped incision and free division of the lower attachments of the sterno-cleido-mastoid. Dr. D. says: "The innominate did not bifurcate till high up, so that the subclavian was nearly opposite the cricoid cartilage. The carotid was bent as though pushed up from below (ᔕ). The innominate and subclavian were somewhat enlarged and appeared diseased, the carotid less so. The tumour was formed by the subclavian at its origin. Below that the diseased condition of the subclavian and innominate counter-indicated the application of the ligature. I simply tied with little hope the common carotid. The patient made a good recovery from the operation, but with no improvement in the aneurism. He was then put upon tannic acid, gr. 60, a day, for two months more. On its discontinuance the tumour began to decrease in size, and he was finally discharged, as I was told, with no visible pulsation."

The following summer he was admitted to Bellevue Hospital, 4th Surg. Div. The record reads: "The tumour now is the size of a hickory-nut and situated about an inch behind the anterior margin of the sterno-mastoid muscle, and the same distance above the clavicle. It is fusiform in shape, pulsates strongly, but conveys no bruit. The subclavian was tied [in its 3d portion] by Dr. Mott, Aug. 17, 1876, when the pulsation of the aneurism became somewhat diminished, as well as its size. Sept. 13th, ligature removed this morning, 27th day. The aneurism does not show any special change in size or pulsation." Pulsation was noticed in the radial artery about three weeks after the operation. The patient left the hospital soon afterwards. Dr. Wyeth (loc. cit.) says he saw the patient a year afterwards, and that "a small hard lump, about the size of a nutmeg, could be felt to rise with the cardiac impulse, no thrill or bruit." Oct. 7, 1879, the patient returned to the hospital with Bright's disease, and died in ten days of pulmonary œdema. There is no record of any examination of the neck at that time.

The following description of the specimen has been kindly furnished me by Dr. W. H. Welch, Curator of the Hospital, who made the last dissection:—

"The specimen consists of the head, neck, thorax, and arms of a man, dissected so as to show the heart and vessels which have been filled with plaster of Paris by injection through the left carotid. As originally prepared, the upper half of the sternum was left in place, as was also much of the soft tissue enveloping the arch of the aorta and the roots of its branches. All of the sternum, except a narrow strip at the top, has now been removed, the exterior of the arch of the aorta cleaned, and an opening made in the anterior aspect of its ascending portion through which the contained plaster has been withdrawn.

"The right carotid is obliterated from its origin to within a short distance of its termination, the right subclavian is obliterated in its third portion; the branches of its 1st and 2d portions are patent, enlarged, and filled with the injection material. A small A. thyroidea ima arises from the arch just to the left of the innominate. The innominate has a diameter of $1\frac{1}{2}$ centimetres, and a length of $2\frac{1}{2}$ centimetres. The portion adjoining the origin of the carotid is thrown into small folds as if it had not been entirely filled by the injection. Upon puncturing it there is no evidence of its containing clot. The origin of the left carotid is $2\frac{1}{4}$ centimetres from that of the innominate.

"The ascending portion of the arch of the aorta has a diameter of 8¼ centimetres. There is a dilatation which involves the upper portion of the ascending arch and the adjacent portion of the transverse arch. This dilatation is most marked on the right border, and the anterior and superior surfaces of the aorta. This dilatation, which is not distinctly sacculated, projects about 2 centimetres forwards, upwards, and to the right, beyond the normal lumen of the aorta. It lies in contact with the right sterno-clavicular articulation and the adjacent portion of the sternum. Its highest point is about on a level with the upper border of the sternum. Its highest point is a dome-like secondary dilatation about 1 centimetre in height and 2 centimetres in diameter, from the summit of which the innominate artery arises by a sharply defined orifice.

"These dilatations contain no laminated clot; their wall is smooth and covered with plaster. This wall varies from 2 to 4 mm. in thickness, and apparently consists of the original coats of the artery.

"The specimen, therefore, presents an aneurismal dilatation involving the upper part of the ascending and a part of the transverse arch of the aorta. The root of the innominate is possibly likewise involved."

Two questions arise: what was the tumour observed during life, and what was the effect, if any, of the operations? It seems to be certain, especially in view of the description given of the vessels at the time of the first operation, that the tumour was formed by the upper end of the innominate, which was situated unusually high in the neck, perhaps pushed up by the dilatation of the aorta, and forward by the curving of the carotid. There is no reason to suppose that the dilated portion of the aorta (including in that term the secondary dilatation, mentioned by Dr. Welch, which may possibly have been formed partly by the lower end of the innominate) ever rose above the clavicle, for it shows no sign of having undergone a partial cure. This upper end of the innominate shows now no aneurism and no trace of a cured one; at the most, it is somewhat dilated, but there is no pouch, no fusiform expansion, and no clot within it. The fact that the tumour remained unchanged in size for a considerable time after each operation shows that there was no diminution of pressure within it, such as has been observed in one or two similar cases, and might have allowed the over-stretched wall of the vessel to re-contract. It is simpler, more in accordance with the record of the case, the facts of the autopsy, and the natural history of aneurism, to explain the apparent tumour observed during life by the unusual position of the vessels than by the hypothesis of an aneurism that has since disappeared without leaving a trace.

There is no anatomical evidence that the operations accomplished the object of starting the only process, the deposit of laminated clot, by which, as far as is known, the distal ligature can lead to the cure of an aneurism, or, in short, that they had any effect upon the innominate or the aorta. Nor is the clinical evidence much more affirmative. The tumour was "as large as a hickory-nut" at the time of the first operation, it was of the same size nine months afterwards, and remained unchanged until the patient left the hospital. A year later it is described by another observer

as being "as large as a nutmeg," and there the record ceases. It never had a thrill or bruit, and never caused objective symptoms.

As it is not known whether or not the aneurism of the aorta existed at the time either of the operations was performed, it is idle to speculate upon the effect, or the absence of effect, of them upon it.

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## ARTICLE XIX.

### SCIATIC NEURALGIA CURED BY NERVE-STRETCHING. By NORMAN MACKINTOSH, M.D., of Gunnison, Colorado.

THE patient, Mr. A., aged 41, intelligent, and of fine physique; never had syphilis; of temperate habits, family history unimportant.

For more than sixteen years he has suffered intense pain in the thigh, knee, and foot, from sciatic neuralgia, which resisted all the ordinary therapeutic measures of treatment. At first the attacks were rare, and only lasted for a few days, but they gradually increased in frequency and intensity, until finally there were only brief intervals of absence of pain, and they lasted from five to six weeks without relaxing, during which paroxysms he ate very little and—as he said—slept *none*. He could take morphia sulphate by the grain hypodermically, without inducing sleep and without relieving the pain.

When I first saw him, four months ago, I advised an operation for the relief of his pain by stretching the great sciatic nerve. He at once consented, and I operated the next day, using sulphuric ether as an anæsthetic, and carbolic precautions.

I made a longitudinal incision over the site of the nerve five and a half inches in length, beginning at the inferior fibres of the gluteus maximus muscle and cutting downward. Cutting through the skin and adipose tissue, separating the muscles and delicately dissecting the firm connections from the adjoining parts, I laid bare the nerve and *forcibly* stretched it. The wound united by "primary union."

From the moment of the operation the patient was entirely free from pain, and when last seen, four months after the operation, he had no return of the pain, though working on the farm every day.

# REVIEWS.

ART. XX.—*Die Gelenk-Resectionen nach Schussverletzungen ihre Geschichte Statistik, End-Resultate, von* Dr. E. GURLT, Professor der Chirurgie an der Kœnigl, Friederich-Wilhems-Universität zu Berlin. Mit 26 in den Text gedruckten Holzschnitten. Pp. 1333. Berlin, 1879. *Resections of Joints for Gunshot Injuries: their History, Statistics, and Ultimate Results.* By Dr. E. GURLT, Professor of Surgery at the University of Berlin.

WE have before us the voluminous work of the eminent Professor of Surgery at Berlin, Dr. E. Gurlt, in which he has presented the history, statistics, and ultimate results of joint excisions for shot injury; his object has been to elucidate some points in the history of these operations, that have been partially forgotten, to offer reliable statistics, but principally to present the ultimate results of resections many years after their execution,—a subject almost unexplored till now. Dr. Gurlt was led to undertake this arduous task on account of the increased number of operations performed in recent wars, and because of the existing difference of opinion regarding the final results. The report of Prof. Hannover, of Copenhagen, on the miserable condition of the Danish invalids, in whom the operation had been performed during the Schleswig-Holstein campaign of 1864, had left an unfavourable impression; it was also ascertained that the results in the Prussian invalids of 1864 did not fulfil the expectations which had been formed; and the publications regarding the effects of the operations during the Franco-German War of 1870–1871, did very little towards removing the unfavourable professional sentiment. But since most of the publications on this subject were based upon the reports of Examiners for Pensions, and presented the results only a year or two after the operation, when some of the wounds had scarcely healed, and when in the majority of cases the restoration of the functions of the limb was as yet incomplete, Dr. Gurlt entertained the reasonable hope that subsequent examinations might reveal better results. In view of these facts, and stimulated by the "Surgical Observations" of B. v. Langenbeck, published in 1874, he began to institute a re-examination of all the Prussian invalids, in whom excisions had been performed ten years before, in 1864, and after successfully completing this task he carried his examinations back to the surviving invalids, from excisions, of the Schleswig-Holstein campaign of 1848–1851. He finally utilized the available material of the wars of 1866 and 1870–1871, and refers to the rich store of information derived from the Second Surgical Volume of the "History of the War of the Rebellion." He has, in fact, extended his researches to every published case of former wars, and thus been enabled to collect 3668 cases of excisions of joints after shot injuries, and definitely ascertained the final results or present condition in 668 invalids of this class, and the records of these, together with a detailed account of the operated limb, the extent of usefulness, etc., really constitutes the most important and valuable part of his labour.

The book is divided into three parts, the first and most voluminous of which covers 1204 pages, and treats in detail of the history of the operation of joint excisions for shot injury, from their first introduction until 1879. In his introduction to the subject, whilst pointing out that Messrs. White, Park, and Moreau the elder, were not the first to originate the operation, their merits in having been the first to establish excisions of joints on a scientific basis are duly recognized. Prof. Gurlt gives a brief preliminary history of resection of the six principal joints, beginning with the shoulder. The first recorded removal of the head of the humerus for caries, and probably partial anchylosis, appears to have been successfully performed by a German surgeon, Schaeffenbergs, in 1726, but neither this case, nor the one operated on in 1740 by Thomas, of Pézenas, in Languedoc, are regarded by the author as methodical joint excisions. The first formal excision was performed in 1771 by Mr. James Bent, of Newcastle, for caries of the head of the humerus, and for shot injury, after the fall of 1792, by Percy.

The first excision at the elbow-joint is attributed by H. Park to Wainman, of Shrimpton, as having been performed in 1759. In Jeffray's work, "Cases of Excision of Carious Joints," Glasgow, 1806, reference is also made to a case operated on by Justamond in 1775, and Tyre, of Glocester. Mr. Park, in his observations published in Jeffray's work, laments the fact that but little attention has been paid to his publication of 1783, and that the practice has not been adopted in the army and navy of Britain. Dr. Gurlt, in this connection, incidentally refers to Jeffray's remarks, regarding the invention of the chain saw, and presents all the available evidence on the subject. The first resections at the elbow-joint for shot injury appear to have been performed by Percy, or under his supervision, after the fall of 1792. The first authenticated cases were operated on by Moreau, father and son, in 1794. The first excision for shot injury in the United States appears to have been performed by Dr. Otis Hoyt, during the Mexican War, 1847, in the case of an Illinois soldier, who recovered, with perfect use of the hand.

The lower extremity of the radius was excised by Cooper in 1758; the first formal excision of the wrist-joint appears to have been performed by the senior Moreau in 1794; the operation was only introduced into military practice as late as 1855. Excision of the hip-joint was first performed by Anthony White at the Westminster Hospital, London, in April, 1821, on a boy eight years old, who died of consumption five years after the operation. As early as 1769, Mr. Charles White, of Manchester, demonstrated the possibility of the operation on the cadaver. The first operation for shot injury was performed by Oppenheim in the Russo-Turkish war of 1829, and the second by Seutin in 1832. Sir Charles Bell, after the Battle of Waterloo (1815), urged the performance of the operation on Guthrie, without effect. The first excision of the hip-joint in this country was performed in 1852 by Bigelow, of Boston.

The knee-joint was excised for the first time in 1762, by Filkin, of Norwich, and subsequently by Park in 1781 and 1782; the elder Moreau performed his first operation in September, 1792, in the presence of Percy and other army surgeons. For shot injuries, the operation was brought into notice by Textor in 1847, and Knorre, 1849; the first excision in military practice was performed by Fahle, under Stromeyer's supervision, in the early part of 1851.

Excisions of the ankle-joint were performed by Moreau, senior, in 1792

and 1796, and by his son in 1815. The first reliable case for shot injury was operated on by Langenbeck in 1859, five years after the injury; in May, 1864, he operated in a recent case, while almost simultaneously the operation was performed in this country by Bontecou and Holloway.

After this brief introduction, Prof. Gurlt enters upon the consideration of all authenticated excisions of joints performed for shot injury during the several wars between 1792 and 1879. Each war or campaign is disposed of in different sections, the nature of arms and ammunition used, as well as the percentage of wounded, etc., are discussed, and the opinions of leading surgeons regarding the merits of joint excisions are freely quoted. Here we find the history of over 3600 cases, of which either abstracts or the principal facts in a tabular form are given. In addition this part contains a full description of the present condition of the operated limb in 668 surviving invalids from excision of joints, between the years 1848 and 1871. The details of these cases are very complete and interesting, and form the basis for his statistics and opinion regarding the ultimate results of the operation.

Prof. Gurlt, in his statistical part of the book, gives a general summary of excision of joints for shot injury, based upon the details furnished in the historical part of the volume; from this we learn that he has collected and tabulated 1661 cases of excision of the shoulder, with 1067 recoveries, 27 doubtful results, and 567 deaths, or 34.70 per cent.; 1438 cases of excision of the elbow-joint, with 1054 recoveries, 35 doubtful, and 349 fatal results, or 24.87 per cent.; 133 excisions at the wrist, with 112 recoveries, 1 doubtful, and 20 fatal results, or 15.15 per cent.; 139 excisions of the hip-joint, with 16 recoveries, 1 doubtful, and 122 fatal results, or 88.40 per cent.; 146 excisions of the knee-joint, with 33 recoveries, 2 doubtful, and 111 fatal results, or 77.08 per cent.; 150 excisions of the ankle, with 94 recoveries, 5 doubtful, and 51 fatal results, or 33.92 per cent. Total, 3667 cases, with 2376 recoveries, 71 doubtful results, and 1220 deaths, or 33.92 per cent. Of this large number nearly one-half, or 1716 excisions, were performed in this country. Excision of the shoulder-joint was performed in 45.29 per cent. of the total number collected by the author; excision of the elbow in 39.21 per cent.; of the wrist in 3.62 per cent.; of the hip-joint in 3.79 per cent.; of the knee in 3.98 per cent.; of the ankle in 4.09 per cent.

With a view of ascertaining the mortality after joint excisions, performed during the large wars, Dr. Gurlt has grouped the excisions performed in the five German wars of 1848–1851, 1864, 1866, 1870–1871, with those of the War of the Rebellion, which together furnished 3278 cases. Of this number 1453 cases were excisions of the shoulder, with 928 recoveries, 17 doubtful, and 508 fatal results, or 35.37 per cent.; 559 cases were examples of primary excision, with 3 doubtful results, and 177 deaths, or 31.83 per cent.; 129 of intermediate operation, with 1 doubtful result, and 68 deaths, or 53.12 per cent.; 618 secondary excisions, with 4 unknown results, and 241 deaths, or 39.25 per cent.; 27 late excisions, with 1 death, or 3.70 per cent.; and 120 excisions of uncertain date, with 9 unknown results, and 21 deaths, or 13.51 per cent.

In excision for disease the statistics show a more favourable result, 50 cases tabulated by Hodges giving 42 recoveries, and but 8 deaths, or 16 per cent. Of 1334 cases of excision of the elbow-joint, with 987 recoveries, 25 doubtful results, and 322 deaths, or 24.59 per cent., 393 cases were examples of primary excision, with 4 unknown results, and 84 deaths,

or 21.59 per cent.; 116 intermediate excisions, with 3 unknown results, and 33 deaths, or 29.26 per cent.; 690 secondary excisions, with 9 unknown results, and 194 deaths, or 28.48 per cent.; 14 late excisions, all successful; 121 excisions of uncertain date, with 9 unknown results, and 11 deaths, or 9 per cent. Heyfelder and Boeckel have tabulated 145 cases of this operation for disease, with but 20 deaths, and 7 consecutive amputations, giving a mortality of 13.8 per cent.

Of 119 cases of excision at the wrist, with 100 recoveries and 19 deaths, or 15.96 per cent., 39 cases were primary excisions, with 4 deaths, or 10.25 per cent.; 8 intermediate excisions, with 3 deaths, or 37.50 per cent.; 53 secondary excisions, with 12 deaths, or 22.64 per cent.; 7 late excisions, all successful; and 12 excisions of uncertain date, all successful. The statistics of wrist-joint excision for disease are not as favourable, 31 terminated cases tabulated by Hodges giving 6 deaths, or 19.35 per cent., and 8 subsequent amputations.

Of 119 cases of excision of the hip-joint, with 11 recoveries, 1 doubtful, and 107 fatal results, or 90.67 per cent., 35 cases were examples of primary excision, with 2 recoveries, 1 unknown result, and 32 deaths, or 94.11 per cent.; 16 intermediate excisions, with 1 recovery and 15 deaths, or 93.75 per cent.; 64 secondary excisions, with 7 recoveries and 57 deaths, or 89.06 per cent.; 4 late excisions, with 1 recovery and 3 deaths, or 75 per cent. The statistics of hip-joint excision for disease show a much more favourable result. Dr. Ashhurst has collected 376 cases, of which the results are known in all but 49. The total number of recoveries is 164, and of deaths 163, or 49.85 per cent. of the terminated cases.

Of 116 cases of excision of the knee-joint, with 21 recoveries and 95 deaths, or 81.89 per cent., 30 cases were examples of primary excision, with 10 recoveries and 20 deaths, or 66.66 per cent.; 10 intermediate excisions, with 1 recovery and 9 deaths, or 90 per cent.; 70 secondary excisions, with 8 recoveries and 62 deaths, or 88.57 per cent.; 2 late excisions, both fatal; 4 excisions of uncertain date, with 2 recoveries and 2 deaths, or 50 per cent. The statistics of the operation for chronic disease are by far more favourable. Of 431 cases collected by Péniéres 300 recovered, and 131, or 30.4 per cent., died.

Of 137 cases of excision of the ankle, with 85 recoveries, 4 uncertain, and 48 fatal results, or 36.09 per cent., 7 cases were examples of intermediate excisions, with 3 deaths, or 42.85 per cent.; 127 of secondary excisions, with 4 unknown results and 44 deaths, or 35.77 per cent.; 1 late excision (successful); 2 excisions of uncertain date, with 1 death, or 50 per cent. The statistics of excision of the ankle-joint for disease show a more favourable result; of 51 cases collected by Spillman, 35 recovered, 10 died, 1 the result not known, in 5 subsequent amputation was performed. Mortality per cent. of terminated cases 20 per cent.

Dr. Gurlt also adduces the interesting fact, that our surgeons performed primary excisions in more than 54 per cent. of their cases, and the Germans in only 9 per cent.; on the other hand, our surgeons performed secondary excisions in only 29 per cent., and the Germans in about 70 per cent. of their cases.

In the 3280 cases of excisions above referred to, consecutive amputation was required in 152 cases, with 78 deaths, or 48.34 per cent.; these amputations were necessary after excision of the shoulder in 1.65 per cent.; of the elbow in 7.04 per cent.; wrist in 9.24 per cent.; knee in 4.31 per cent.; and ankle in 12.95 per cent.

The principal causes of death in 474 fatal excisions at the shoulder are stated as follows: pyæmia 157, septicæmia 19, tetanus 5, gangrene 12, hemorrhage 20, exhaustion 58; total 271 determined cases. In 304 fatal cases of excision at the elbow, the principal causes of death are stated as follows: pyæmia 146, septicæmia 5, tetanus 2, gangrene 5, hemorrhage 3, exhaustion 25; total 186 cases. Pyæmia was the most frequent cause of death after excisions at the wrist; and after primary excisions of the hip-joint, collapse, shock, exhaustion, and septicæmia are mentioned, while after intermediate and secondary excisions, septicæmia, pyæmia, and exhaustion from suppuration and hemorrhage appear to have been the principal causes of death. After excisions at the knee, pyæmia was the cause of death in 44 cases, septicæmia in 13, exhaustion 6, dysentery 4, tetanus 3; hemorrhage in 2 cases.

After excision of the ankle the principal causes of death are stated as follows: pyæmia 21, septicæmia and gangrene 6; exhaustion 8; subsequent amputation 12.

We have already stated that Prof. Gurlt has collected the ultimate results of joint excisions in 668 cases, of all of which the historical part of the volume contains full details.

The third part of Prof. Gurlt's work is devoted to an analysis of the ultimate results of joint excisions, and is replete with interesting facts. The author says:—

"In order to compare the final results of joint excisions for shot injury, it became necessary to adopt some classification. In doing so I have arranged them into five classes, and, in discriminating between these, I have laid more stress upon the more or less regained usefulness of the limb in general, and less so on the best possible restoration of the normal form or function of the respective joint. So, for instance, in the case of the elbow-joint, where the most perfect recovery is followed by the restoration of almost normal mobility of the joint, I regard, under certain circumstances, the final result a very good one, even though there may be immovable union, so long as the arm and hand, regardless of the impossible extension and flexion, approximates in usefulness the sound extremity. In my classification for all joints, not only in those in which the after-treatment aims to secure a movable false joint, as in the shoulder, elbow, wrist, and hip, but also in those, where, as yet, recovery with anchylosis is regarded most desirable, as in the case of the knee and ankle-joint, I make a distinction between both forms of recovery, and designate the movable union with *a*, the immovable union with *b*. The first class comprises those results, which, in view of the excision, are the best obtainable, as for instance in the shoulder, elbow, and ankle-joint, an almost complete restoration of the normal form and functional utility of the limb, or at least the latter alone; also those cases in which a most perfect result is not obtainable and in which shortening of the limb, as in the hip and knee-joint, is unavoidable, so long as the greatest possible restoration of functional utility is obtained. The second class includes those cases, in which the best possible result has not been attained, but in which the limb is useful. In the third class, the usefulness of the limb is limited, and artificial appliances are necessary. In the fourth class, the usefulness of the limb is either suspended or totally wanting. In the fifth class of cases the limb is not only useless, but also a burden to the owner.

"Expressed in a few words the classes correspond to the following results: Class I. 'very good,' Class II. 'good,' Class III. 'middling,' Class IV. 'bad,' Class V. 'very bad,' *a*, with movable *b*, with immovable union."

The ultimate results of 213 cases of excision at the shoulder, performed in German soldiers from 1848 to 1871, are classified as follows: Class I., *a*, 4; Class II., *a*, 84; *b*, 6; Class III., *a*, 92; *b*, 10; Class IV., *a*, 12; *b*, 5. The ultimate results of 355 excisions of the elbow-joint are classified as

follows: Class I., *a*, 17; *b*, 3; Class II., *a*, 50; *b*, 34; Class III., *a*, 125; *b*, 64; Class IV., *a*, 38; *b*, 13; Class V., *a*, 9; *b*, 2. The ultimate results in 16 excisions of the wrist are given as follows: Class II., *a*, 1; Class III., *a*, 6; *b*, 2; Class IV., *a*, 4; *b*, 2; Class V., *a*, 1. The ultimate results of 4 hip-joint excisions are as follows: Class I., *a*, 1; Class II., *a*, 2; *b*, 1. The ultimate results of 9 excisions of the knee-joint are classified as follows: Class I., *b*, 5; Class II., *a*, 1; *b*, 2; Class V., *b*, 1. The ultimate results of 55 excisions of the ankle are classified as follows: Class I., *a*, 1; *b*, 7; Class II., *a*, 7; *b*, 14; Class III., *a*, 11; *b*, 12; Class IV., *a*, 1; Class V., *a*, 1; *b*, 1.

The ultimate results of 213 excisions of the shoulder were favourable (Class I. and II.) in 94 cases or 44.13 per cent.; unfavourable (Class III., IV., and V.) in 119 cases or 55.86 per cent.; 355 excisions of the elbow-joint yielded 104 or 29.29 per cent. favourable, and 251 or 70.70 per cent. unfavourable results; 16 excisions of the wrist yielded 1 or 6.25 per cent. favourable, and 15 or 93.75 per cent. unfavourable results; 4 excisions of the hip-joint yielded 4 or 100 per cent. favourable results; 9 excisions of the knee-joint yielded 8 or 88.88 per cent. favourable, and 1 or 11.11 per cent. unfavourable results; 55 excisions of the ankle yielded 29 or 52.72 per cent. favourable, and 26 or 47.27 per cent. unfavourable results. Total 240 or 36.81 per cent. favourable, and 412 or 63.19 per cent. unfavourable results.

Prof. Gurlt concludes his work with the following observations, which we quote in full for the benefit of our readers:—

"In reviewing the ultimate results of joint excisions for shot injury, as presented for the several joints in the preceding pages, the general impression received is not a favourable one; it is especially true that the ultimate results after excisions of the shoulder and elbow-joint, so largely practised in our recent great wars, and of most importance as regards the preservation of the capacity for labour in the injured individual, have not come up to the ideal of the majority and are, generally speaking, much more unfavourable than those obtained in civil practice, after so-called pathological excisions, or those performed for disease.

"If we inquire into the causes of this strange difference, we should suppose that the excisions performed in wounded soldiers, who are mostly strong, young, and healthy men in the bloom of life, should furnish better results than the other class in which the respective individuals are frequently suffering from some dyscrasia, or are broken down by long-continued suffering or suppuration. I look for the cause of this difference in disfavour of soldiers in the following circumstances, viz.: 1. Injury of the joint by a bullet: this, of course, is at times slight, while in some instances it is so great as to require excision of one or all of the articular extremities to an extent never required for pathological conditions, the remaining small and narrow sawn extremities are not calculated to favour the formation of a new joint; again, owing to the extensive excisions, the muscular insertions are at times too closely approximated, and unable to contract to a corresponding degree, they simply fail to exert, after recovery, a sufficiently powerful influence. Since the wars of 1848–1851, during which smooth-bore guns and round bullets were almost exclusively used, an increase in the extent and intensity of injuries of the bones has been observed, so that a certain difference will also be found in the results of the cases operated on then or before that time, when the comminution of bones was less extensive than those of more recent wars. 2. The occasional severe injuries of the soft parts in the vicinity of joints, from shell fragments, etc., are necessarily a cause of more unfavourable results. 3. The unfavourable surroundings of patients in time of war, especially the occasional but unavoidable overcrowding of the wounded, insufficient food, care, and transportation as compared with the advantages of a well-regulated hospital or home, as well as the necessary dispersion of the wounded, subsequent treatment at their

homes or in private houses, and indolence of the patients, are fruitful causes of bad final results. 4. Faulty operations and after-treatment are more apt to occur in times of war, when some inexperienced surgeons are called upon to perform operations, while in civil practice most of the cases fall into the hands of experienced operators. 5. The prospect of a pension, which increases with the degree of uselessness of the limb, is a sufficient inducement to worthless and lazy individuals religiously to abstain from doing anything towards the restoration of the functional utility of the limb; this is a reason which, of course, only applies to exceptional cases in civil practice. These, then, are the external conditions which help to swell the number of unfavourable final results, after excisions, in military practice.

"The principal local conditions which render the use of the limb difficult or almost impossible are briefly the following: (1) Insufficient contact of the sawn ends of the bone, below each other (elbow-joint) or with the unresected part of the joint (shoulder-joint), in consequence of great loss of substance; in such cases the peripheral part of the extremity will have no central support. (2) Original smallness of the sawn ends (in consequence of the same condition), or subsequent atrophy of the resected parts of the joint, rendering an extensive contact of surfaces, so essential for the function of a joint, impossible; but a longitudinal displacement of the resected extremities, induced by muscular contractions, very probable. Further, in consequence of deficient contact of the sawn surfaces, there may be (3), absence of the formation of a new true joint in place of the resected (shoulder- and elbow-joint); since (4) we may find instead a formation of a more or less long and loose fibrous mass, which in the elbow-joint permits not only of extensive lateral motion, but also, in certain cases, of a flail-like dangling of the peripheral part of the limb (upper and forearm), and even of a rope-like twisting and turning of the extremity. (5) The formation of numerous osteophytes on the sawn surfaces may occasionally, even in movable unions, prove an obstacle to mobility. (6) The usefulness of the limb will be decidedly impaired in cases of recovery with anchylosis or synostosis, when the peripheral part of the extremity is firmly united with the central parts at an unfavourable angle, resulting in almost complete extension or twisting of the forearm after excision at the elbow, lateral deformity of the hand when performed at the wrist, flexion in the knee-joint, and a 'pointed toe' or club-foot after excision of the ankle-joint. (7) Weakness or inefficacy of the muscles are very important factors in the production of faulty final results, and may be due to close approximation of the muscular insertions after extensive resections, division of the same during the operation, and regeneration and re-attachment of the fibres in places where they can exert little or no influence on the movements of the limb. Atrophy and paresis of the muscles are usually the result of inactivity, and rarely if ever due to actual lesions of the nerves. In consequence of all these conditions, active muscular contractions are either very much diminished or rendered impossible. (8) Stiffness and deformity of the finger- and toe-joints are frequent causes of bad final results, and, unfortunately, are mostly due to careless after-treatment. (9) Injuries of the nerves (ulnar nerve, for example), either caused directly by the missile or afterwards by fragments, and during the operation may lead to more or less disturbance of innervation in the muscles of the fourth and fifth finger. (10) Painful affections in the extremity of various origin, of a permanent or periodical nature, occurring, for example, in the cicatrix, and proceeding from a principal nerve (neuromata of the ulnar nerve), and partly caused by changes in temperature; objective, but more frequently subjective reduction of temperature; abnormal, copious perspiratory secretion, together with other unfavourable phenomena, render the unsparing use of the resected extremity difficult. (11) While the presence of fistula and discharge of small sequestra interfere but little with the use of the limb, they may at times be the cause of renewed inflammatory action, and are, therefore, not to be regarded as insignificant.

"I shall endeavour to answer the much-debated question, whether, in the majority of cases, the provisional results, or those obtained shortly after recovery, remain stationary, or whether the extremity is susceptible of improvement, or even deterioration in the course of years after the operation.

"From the many examples adduced in the first part of this work, it may be confidently asserted, that much depends upon the intelligence, good-will, and energy of the individual, to render the final result either better or worse. Just as in civil practice, where the respective individuals faithfully endeavour to regain the best possible use of their limbs, upon which they mostly depend for a livelihood, and thereby, as we have seen, really succeed in attaining better final results, so we observe a similar desire on the part of the more educated class (officers, volunteers, and others), who neither lack intelligence nor good-will and industry. I have no doubt that, in case of unfavourable provisional results, it is within the power of invalids, under proper medical guidance, of materially improving their condition.

"Active and passive motions, together with a systematic use of the limb, will greatly improve the atrophy and paresis resulting from muscular inactivity, and promote the mobility of stiffened fingers, while a passive dangle-joint, which perchance may at the same time be present, will gradually gain in firmness by the use of a suitable appliance or apparatus, and thus be transformed into an active, movable joint. Again, if motion in the respective joint, owing to partial anchylosis, is limited, there is nothing better towards facilitating the production of a movable joint than methodical gymnastic exercises, constant use of the limb for the ordinary purposes of life, and, when practicable, the use of electricity, thermal-moore-baths, etc. It is to be remembered, that some of the best-known results were only obtained after years of faithful and energetic perseverance on the part of the patient. If, on the other hand, the patient not only fails to exert himself towards improving the condition of the limb, but studiously aims at a deterioration in order to enlist sympathy or obtain an increase of pension; if he neglects to use the limb at all, places it in a sling, or pins it to his coat—scarcely attempts to use the leg, or causes the limb to dangle on his side like a flail, it would indeed be a wonder if the atrophy and paresis did not materially increase, and the loose fibrous tissue of the dangle-joint become more relaxed. It may be regarded as an established fact, that the more illiterate, indolent, and lazy the individual, the more we may expect an unfavourable final result after joint excisions.

"Having learned the external and local conditions which so frequently exert an unfavourable influence on the final result of joint excisions for shot injury in military practice, the question arises, Had we better abstain in future wars from excisions altogether, or perform them only to a limited extent, and adopt, in shot injuries of joints, an expectant or conservative treatment; or, in exceptional cases, amputation instead? Unfortunately, for reasons given on p. 1210, we are not in a position to adduce sufficient evidence, as regards the life of the patient, or ultimate results, for or against one or the other method; we can only judge by the impressions which the collection and comparison of a large number of joint excisions convey to us. These impressions show, that doubtless in numerous cases of gunshot wounds of joints, treated for a longer or shorter period on the expectant plan, the gradual approach of danger to life has been removed by the operation, as shown by a rapid decline of fever, etc. If it is true, that under certain circumstances it has preserved life, the operation, as compared with amputation, must be regarded as justifiable, even though the final result may not be favourable; which, however, cannot be foreseen at the time of the operation. It is true, we have become acquainted with a few cases who assert that they would probably feel better, and enjoy greater capacity for labour, if amputation instead of excision had been performed. These assertions, however, are only based upon certain ideas which they entertain of the condition of individuals in whom amputation was performed, and who are by no means free from various complaints in their stumps or in the use of their limbs. In reality, there have been but five cases who preferred to have their useless limbs amputated. The condition of a resected limb (elbow-joint, for example) must indeed be very objectionable if it did not afford some advantages over a stump of the upper arm.

"If secondary excisions, as a means of saving life, are fully justifiable, the question arises whether the same is true of primary and intermediate excisions. As already indicated on p. 1228, if the antiseptic treatment of wounds in military practice is generally adopted, it is to be presumed that hereafter most of the

operative interference will fall into the primary and intermediate period of the wound. In case this is done, and all injuries of joints are treated with strict antiseptic precautions, there is no doubt that, for reasons adduced on p. 1228, the number of methodical excisions of joints will be decidedly diminished. If without formal excision, and under continued antiseptic treatment, the case pursues a favourable course, an injury will have been repaired which, under ordinary circumstances and former treatment, no matter how slight the injury to the bone, would probably have necessitated a secondary excision of the joint (frequently total) in consequence of the inevitable chronic suppurative inflammation.

"As soon as we find in our examination of an injury with opening of the joint, extensive comminution of bone, it would be a surgical mistake if we did not endeavour to simplify and remedy the injury, if admissible at all, by means of the most approved method of excision and thus insure more favourable conditions for recovery. Herein lies therefore the justification of primary and intermediate excisions, just as, under certain circumstances, when, in consequence of the extent of the injury or other reasons, neither expectant treatment nor excision appears admissible, ablation of the limb becomes necessary. In the intermediate cases, the performance of one or the other operation will doubtless frequently exert an antipyretic influence, and thus lead to a more favourable course of the case. I believe I have shown, that in the future and notwithstanding the antiseptic treatment of wounds, joint excisions cannot be entirely dispensed with, any more than amputations, although they may be less frequently performed.

"The question arises, what precautions must be adopted to render the final results of excisions less unfavourable than heretofore? Let us commence with the operation, which should always be performed under antiseptic precautions and according to the rules laid down for the several joints on pp. 1233, 1245, 1255, 1266, 1274 and 1279, the excision whenever practicable should be sub-capsular and sub-periosteal. The rough and sharp edges or corners of the bone should be neatly rounded off with a file or chisel to prevent subsequent necrosis of the soft parts, induced by pressure of the sharp extremity. After excision the extremity must be perfectly immobilized by means of the special dressings recommended for the several joints, this should be done, whether we subsequently aim to secure a movable joint or a synostosis, in which case of course the preserved capsules of the joint and periosteal cylinders should either be extended, or the sawn extremities be brought and held closely together.

"It is scarcely necessary to refer to the importance of antiseptic after-treatment. During the progress of the case and until healing has taken place, care must be taken that the dressings insure absolute immobility of the extremities of the bone, which in case recovery with a synostosis is contemplated, should remain permanent; in cases where we expect to obtain a movable joint, we may during this time, barely permit a change in position (elbow-joint for example, p. 1251). All attempts to resort to methodical movements before cicatrization of the soft parts has fully taken place, are decidedly to be deprecated, as having accomplished heretofore much harm; premature traction upon recent cicatricial tissue leads very readily to relaxation and a 'dangle-joint'. Since the most perfect degree of mobility in resected limbs is only obtained after years of continued practice, there is no necessity for hurry in beginning the movements. There are, however, cases, as pointed out on pp. 1239 and 1251, in which we cannot look too soon towards the preservation of motion in the finger and toe-joints, which owing to stiffness and deformity, the result of long rest and immobility, have frequently led to useless hands, but sufficient time must be given to the reproduction of the divided muscular insertions concerned in the movements of these joints (for instance the extensors and flexors inserted on the condyles of the humerus).

"After cicatrization of the soft parts has taken place, and movements can be safely begun, we should pay particular attention to the treatment of muscular atrophy the result of inactivity, and which is best accomplished by the methodical and continued use of electricity and rational gymnastic exercises. At this time the more the invalid uses the operated limb and performs active motions together with systematic exercises, the more we may expect a speedy and favourable result. In mobilizing the elbow-joint, especially if a lateral motion is percepti-

ble, we may resort to the apparatus referred to on p. 1252, which permits only of accurately graduated excursions in certain directions during the active use of the limb. If fistula and pain remain after recovery, the use of thermal baths, and for stiffness of the joint moore and animal baths may be advantageously resorted to. In the execution of joint-excisions and their after-treatment, it will be well to remember that the former, as long as properly done, is generally of less importance to the final result than the latter, which alone is decisive and requires therefore all the attention and ingenuity on the part of the attending surgeon.

"At last we shall answer the question, how those wounded in joints are best cared for in time of war. It has already been stated that the vicissitudes, which they with other wounded encounter, are at times unavoidable, still with a good sanitary organization, it ought to be possible to pay special attention and render speedy assistance not only to this class, but also to those of other categories, p. 1228. If joint-excisions are practised on the field or in general field hospitals they are certainly not the proper place for subsequent treatment, which requires so much time and attention; they should, with exception of the cases of excision at the hip- and knee-joint, be transferred as soon as practicable after reaction has taken place, care being taken to apply dressings which render motion in the parts simply impossible. Instead of turning such cases over to reserve society or private hospitals, they should be sent to a hospital specially designated for the reception of wounded of this class, and which affords all the necessary resources for the treatment of these cases, including thermal baths, electric apparatus, etc.; circumstances point to the 'Wilhelm's Hospital' at Wiesbaden as a suitable place.

"The authority of experienced regular army surgeons is also better calculated to prevent attempts of malingering, etc., on the part of patients, than when surgeons from civil life, whose connection with the service is only temporary, have charge.

"By adopting a course based upon the foregoing rules, it is hoped that it will be possible in future wars to obtain better average results than heretofore."

In closing this synopsis we have only to regret, that it appears to have been impossible for the author to furnish in his elaborate treatise more data regarding the pathologico-anatomical conditions of the resected parts at late periods after the operation. Prof. Gurlt only refers to two cases, in which autopsies were made after excision at the shoulder, and five cases after excision of the elbow-joint, the dissection in two of the latter cases was made after ablation of the limb, although a considerable number of pensioners are known to have died. Surgeon Otis, p. 660, 2d Surgical Volume of the War of the Rebellion, laments the fact, "that in the infrequent instances of deaths at remote periods after the operation, the valuable opportunities for ascertaining the conditions of the parts appear to have been neglected, which is the more to be regretted as science possesses so few precise facts on this subject." As there are now a large number of survivors of operations of this class in the United States, it is hoped that no opportunity for ascertaining the anatomical conditions of the respective joint after death, will be lost in future. From the remarks of Dr. Otis on p. 657, 2d Surgical Volume, it appears to be the intention of the Pension Bureau to institute an inquiry into the exact condition of the limbs that have undergone excisions. It is to be hoped that this will be done, as the material for furnishing precise data is unprecedently large in this country, and should be utilized not only for the information of the Pension Office, but also in the interests of science, and as Dr. Otis hopes to revert to the subject of end-results of excisions in the 3d Surgical Volume, an excellent opportunity would be afforded to place the evidence on record, and if our Southern *confrères* would institute a similar inquiry into the final results of excisions performed on Confederate soldiers, the question,

as to how far the prospect and receipt of a pension influences the retained utility of the limb, could be fairly determined.

Prof. Gurlt's work, the result of five years' labour, is a monument of painstaking research, and must remain for a long time the standard work of reference for information on the important subject of which it treats.

G. M. K.

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ART. XXI.—*A Practical Treatise on the Diseases of Women.* By T. GAILLARD THOMAS, M.D., Professor of the Diseases of Women in the College of Physicians and Surgeons, New York, etc. Fifth edition. Enlarged and thoroughly revised. 8vo. pp. 806. Philadelphia: Henry C. Lea's Son and Co., 1880.

SIX years ago the fourth edition of this valuable work was issued, and now the fifth is presented us with some very obvious changes. The first of these which strikes the examiner is that of type. The previous editions were printed in small pica, but this in long primer, and thus there is a gain of one fifth of reading matter in an equal number of pages: this number is about the same as that of the last edition. The number of chapters has been increased from forty-eight to fifty-three, and of illustrations from one hundred and eighty-six to two hundred and sixty-six.

Coming to the examination of the book itself by chapters, we find very few alterations or additions in the first, the historical sketch of gynecology: Dr. Emmet's recent work is highly complimented, and antiseptic surgery is spoken of as probably one of the greatest advances made in the art of surgery.

Dr. Thomas still warmly advocates Sims's speculum in examinations. With this instrument, the patient lying on her side, "the cavity of the uterus can be probed with perfect ease," etc. He then states, in reference to this great superiority of the instrument of Sims, "it may be very pertinently asked how I reconcile this opinion with the facts that with the exception of Emmet and myself no other writer of a systematic treatise on gynecology recommends this method of exploration in preference to that by the cylindrical speculum in daily practice; that few, if any, of the gynecologists of Great Britain or the continent of Europe employ it to the exclusion of the old plan," etc. The cylindrical speculum is hardly an instrument in daily practice, at least by the recommendation of eminent recent gynecologists. Gallard, for example, limits its use to the recognition of the position of the uterus and to the application of a cautery, either actual or chemical. Le Blond states that the speculum which he prefers for examination is Ricord's bivalve. Dr. Churchill chose for minute examination, the quadrivalve of Ricord, and reserved the cylindrical for the application of leeches, the use of caustic, etc.

But we wished, in reference to Dr. Thomas's statements, to call attention to the appreciation of Sims's instrument by Dr. Chrobak. Dr. Chrobak states that

"by this method of speculum examination, which is unfortunately not generally practised, one sees the parts most satisfactorily. . . . The examination by the finger and sound is unhindered, the application of the latter rendered much easier. For many therapeutic and operative measures there is sufficient accessibility; by a tenaculum the posterior lip can be drawn down, and one can see a short distance in the cervical canal. . . . The great objection to the use of

this speculum is that a third party is always needed, and this will prevent its general adoption. In hospitals this objection is of no importance, but in private practice, the patient may object even to a female assistant, and then too there is a difficulty in always having such assistant with you."[1]

This seems to us quite a just appreciation of the instrument.

The second chapter, *The Etiology of Diseases peculiar to Women*, presents some new causes of disease peculiar to women, *e. g.*, constipation, neglect of physical development, overwork of brain, non-recognition or neglect of injuries due to parturition. The following statement is made:—

"Among our farming population, where all the out-door work is done by the males, the women commonly take less exercise in the open air than do those in our cities, and much of their time is spent in rooms heated by stoves which cook the air and render it dry and unwholesome."

Conceding the propriety of the cooking figure, and the fact of the frequent use of stoves in the country, the rest of the statement we very much doubt. Most of the farmers' wives and daughters, at any rate in the west and northwest of our country, are quite as much in the open air as females living in our great cities, more indeed, probably, than thousands of New York shop girls and sewing women: their lives are very far from being in-door and sedentary.

We wish Dr. Thomas had devoted more space to the consideration of the injurious effects of intense mental application at the period of puberty, and the importance of giving girls at this transition period better opportunities for physical development even if education must be delayed a year or two. That valuable book by the late Dr. Edward H. Clarke upon *Sex in Education* should be in the hands of every physician, of every teacher, and of all intelligent parents. Obedience to its instructions would prevent many a woman from becoming the victim of disease.

The third chapter, *General Considerations upon Uterine Pathology and Treatment*, is nearly the same as the twelfth chapter of the fourth edition. Dr. Thomas, p. 59, still holds to Virchow's distinction between *hypertrophy* and *hyperplasia*, a distinction which we think, with Bœckel, is a mere subtlety of language; hypertrophy inevitably results in hyperplasia, the latter cannot occur without the former, not only as antecedent but as cause.

The fourth chapter is new as to its title, *General Considerations upon some of the most important Therapeutic Resources of Gynecology*, and is almost entirely new as to its contents. About four pages are devoted to *pessaries*,—the word devoted ought to be italicized, for probably with the exception of the late Dr. Hodge, no American writer of note upon diseases of women, has been so warm an advocate of these instruments as is Dr. Thomas. He observes on p. 69:—

"In spite of all its attendant evils, the use of the pessary is, as I have said before, one of the most important points in gynecology, and every practitioner of that art should make it a faithful, special, and constant study. I confess that when I am told, as I sometimes am by physicians, that they never use pessaries, because they are so strongly prejudiced against them, the question always arises in my mind, then how and why do you treat uterine diseases? How pessaries can be dispensed with, is to me one of the unfathomable mysteries of gynecological practice."

Unfathomable mystery expresses the difficulty of the case about as strongly as the English language permits, if indeed it does permit.

[1] Handbuch der Frauenkrankheiten. First part. Stuttgart, 1879.

Dr. Thomas is not less earnest in his advocacy of antiseptic means, stating that the following rules should always be observed in operating on the female genitalia:—

"1st. Before and after every operation wash all instruments in very hot carbolized water, and during every operation keep all instruments immersed in carbolized water. This should be especially observed in regard to needles and sutures.

"2d. In all laparotomy operations pursue Lister's antiseptic method fully.

"3d. Where the spray is not employed always bathe denuded surfaces, both before and after apposition by suture, with carbolized water.

"4th. Always destroy sponges used in an operation which admits of the possibility of these being contaminated by septic fluids, and when they are employed a second time always have them immersed previously in boiling carbolized water.

"5th. After all operations upon the uterus bathe or spray the vaginal portion of the organ with carbolized water, and tampon lightly for twenty-four hours with antiseptic cotton. This being removed, syringe the vagina with carbolized water at short intervals.

"6th. After all operations on the pelvic organs, syringe the vagina with carbolized water as often as once in every eight hours.

"7th. After all operations quiet pain and nervous excitement by opium.

"8th. Before all grave operations give a full dose of quinine, ten to fifteen grains.

"9th. Before every operation let the operator and his assistants cleanse and disinfect their hands as if they felt sure that septic material attached to them.

"10th. Avoid even trivial operations, unless good reason for doing otherwise exist, for a few days before and after menstruation."

The order of the rules seems a little confused—some of the first things placed last—and possibly these ten commandments are not as sacred as other more familiar ten; possibly, too, occasional disobedience of the seventh might be venial, for opium need not be used in every case of pain and nervous excitement; the degree, the cause, and continuance of these should have some weight: yet they are excellent rules, and ought to be engraved on every operator's mind.

The fifth chapter, *Diagnosis of the Diseases of the Female Genital Organs*, corresponds with the third chapter of the fourth edition; a few additions, however, to the text and illustrations have been made. We are glad to see that Dr. Thomas gives less approval to Simon's method of rectal exploration, and would strictly limit it to a few rare cases.

In considering the dangers from tents, Dr. Thomas remarks: "Had all the fatal cases which have resulted from accidents due to tents been faithfully recorded, the list would now be a long one, and it would be greatly lengthened by a record of all the instances in which tedious, exhausting, and dangerous disease has thus been excited." But how can a list of fatal cases be lengthened by any number of non-fatal ones?

The sixth chapter, *Congenital and Infantile Malformation of the Female Sexual Organs*, is, we believe, entirely new. And yet it is a chapter which is of great interest and importance. The embryology of the female sexual organs is briefly given, and thus the key to so-called malformations of these is presented.

*Diseases of the Vulva*, which were considered in the fourth and fifth chapters of the fourth edition, now occupy two chapters, the seventh and eighth. The text is almost the same, but a new illustration is given, viz., that of Paquelin's thermo-cautery, an instrument which has become almost essential in gynecic practice.

The ninth chapter, *Anatomy, Physiology, and Pathology of the Perineum*, is new, and is one of the most important additions to this issue.

Dr. Thomas holds that not only writers upon anatomy, but also those upon obstetrics, neglect to describe the perineum, devote too little space to its consideration. He remarks that "obstetric writers may defend this omission by the assertion that they do not write of anatomy, but of obstetrics, and that the student should come to them informed upon this subject." But if he were to turn to the first fasciculus, issued in 1878, of Tarnier and Chantreuil's[1] work, he would find several pages devoted to the perineum. The chapter contains numerous illustrations, but both with these and the text the profession is familar from their having already been published as a contribution to the *American Journal of Obstetrics*.

The tenth chapter, *Prolapse of Vagina, Bladder, Rectum, and Intestines*, presents only here and there small additions to the consideration of these subjects in the fourth edition. Le Fort's operation of elytrorrhaphy is given on page 181; it is taken from Le Blond's work, but unfortunately the illustrations are omitted, and without these the text is at least difficult to understand.

In chapter eleventh, the treatment of rupture of the perineum is stated very clearly, very fully. We think still, as we have stated in a previous review, that Dr. Thomas is in error in not including in his classification central rupture.

*Vaginismus* and *Vaginitis*, the subjects of chapters twelfth and thirteenth, present no noticeable changes from the text of the fourth edition.

Chapter fourteenth, upon the subjects of *uterine and menstrual retention*, gives much new matter and several new illustrations. Fig. 84 represents a case of vaginal atresia, where the menstrual accumulation is limited to the vagina, the uterus being empty. Hubert[2] refers to this condition, stating that in some cases the uterus in the form of a small, rounded and firm tumour is pushed up as high as the umbilicus.

Dr. Thomas seems to favour in imperforation of hymen or uterus, where there is large accumulation, gradual rather than rapid discharge, and in this his teaching is more in accordance with the practice so strongly insisted upon by Bernutz than that of Emmet. When there is entire closure or absence of the vagina, Dr. Thomas states that Dr. Barnes expresses his preference for Dupuytren's rather than Amussat's operation, and he coincides with him. But had not Courty before Barnes, and Puech[3] still earlier expressed such preference?

The operation of Dupuytren first has the date of 1818, and then a few lines further on, in a quotation from Courty, that of 1817, which is the correct one. Amussat's operation is said, p. 229, to consist "of working with the finger and dull instruments, overcoming resistance by pressure rather than by incision, and completing the operation not in one but several sittings." Then on pp. 230–1 Amussat's operation is given in detail, curved scissors are used, as well as pressure, and the operation apparently accomplished at one sitting. Now we do not quite see the correspondence of the two statements. We do not find in Puech,[4] nor in Fabre,[5] who gives the full report of Amussat's operation as read before the French Institute November, 1835, the least mention of the use of any cutting instrument.

[1] Traité de l'Art des Accouchements.
[2] Cours d'Accouchement, 1878.
[3] We find this word sometimes Peusch, again Puesch, but never correctly given, an error of orthography which has been carried down from the fourth edition at least.
[4] De l'Atrésie des Voies Génitales pour le Docteur Albert Puech, Paris, 1864.
[5] Bibliothèque du Médecin-Practicien.

*Fistulæ of the Female Genital Organs* is the subject of the fifteenth chapter. Some may think there is not a sufficient recognition of the great value of Simon's position and instruments in the exposure of fistulæ. Certainly from some little experience with these such is our opinion. In regard to uretero-vaginal fistulæ, Dr. Thomas refers to two cases in this country recently reported, but still fails to mention the first American case. As to operating for *closure of the vagina*, Dr. Thomas states that Vidal did it in 1833, paring the surfaces of the labia majora and uniting them by sutures. According to Le Double,[1] Vidal's first operation was by cauterization, the second by vertical elytrorraphy, but each in 1832.

The sixteenth chapter, *Fecal Fistulæ*, contains no new matter.

The seventeenth, the thirteenth of the fourth edition, is upon *Acute Endometritis*, and contains no material changes. The same remark applies to the eighteenth chapter, which is entitled *Chronic Cervical Endometritis*. In the nineteenth chapter, *Chronic Corporeal Endometritis*, Dr. Thomas remarks in reference to applications to the uterine cavity:—

"Upon theoretical grounds direct applications to the diseased endometrium would hold out a brighter promise of cure than any other plan of treatment, and during the past quarter of a century it has become the conventional habit to recommend them. In this habit I have shared, until closer observation and enlarging experience during the past five years have led me to become sceptical as to the utility of the course. Observation and experience have so changed my practice that I find myself very rarely resorting at present to applications above the os internum uteri. That they may become necessary in certain cases I do not at all deny; but I maintain that they should not be habitually resorted to: 1st, because they very generally fail in curing the disease; and 2d, because they are by no means void of danger. That a certain number of cures of pelvic peritonitis and cellulitis are created by these applications all must admit. In spite of this fact their use would be decidedly vindicated were their results very promising. But in my experience their results are not promising, and for this reason I have given up their general use."

Subsequently he remarks:—

"It may now be asked, since I oppose the habitual practice of carrying applications above the os internum uteri, as well as that of injecting the uterine cavity, what course I do advise and adopt in the management of this affection. As I have already stated, I would recommend careful attention to the general state, removal of displacements, care of laceration of the cervix, extirpation if possible of any existing neoplasm, and if uterine enlargement exist, the free use of ergot." . . . .

He also refers to certain cases in which the dull wire curette is of great utility. Probably Dr. Thomas is right in his rejection of intra-uterine applications, and it is to be hoped his words will have proper weight with the profession. Supposing that he is right, surely he might have thrown out the six or seven pages in which he describes the various means of applying liquids, semi-solids and solids to the uterine cavity. If this treatment be dangerous and does no good, the profession would forgive him had he omitted its description.

Chapters twenty-one and twenty-two, *Granular and Cystic Degeneration of the Cervix Uteri*, and *Syphilitic Ulcer of the Cervix*, present no addition except a few minor ones in the first. *Uterine Fungosities* is the subject of the twenty-third, an entirely new, chapter; it is brief, but is really one of the most valuable in the book. Then follows another new chapter occupied with *Laceration of the Cervix*. This lesion, which in

[1] Du Kleisis Génital.

the fourth edition was dismissed with a few lines, is now considered in several pages. Dr. Thomas gives Dr. Emmet all praise for first recognizing the importance of this condition, and devising the means for remedying it, and states that his teaching in this regard "constitutes one of the most important contributions to gynecology ever made."

It seems to us somewhat remarkable that attention has not been called to the following passage in the writings of Paulus Ægineta: "Fissures occur about the mouth of the uterus from difficult parturition, and at first they escape notice while the pains from labour are recent, but afterwards they are slightly felt, either upon manual inspection or during coition, when they bleed owing to the friction. They are also discovered when the vagina is distended, for ruptures in the circle of the mouth are perceived."

How frequently are these lesions the source of discomfort, disease, and require treatment? It is startling to be told that one woman in six that have borne children and who have uterine disease, has a lacerated cervix (Goodell), and still more that one-half of the ailments among those who have borne children are to be attributed to lacerations of the cervix (Emmet). We dare not question the accuracy of two such able and conscientious observers, whose opportunities have been so great. Mr. Massey, in "Adam Bede," says, "I tell you there is not a thing under the sun that needs to be done at all, but what a man can do better than a woman, unless it is bearing children, and they do that in a poor make-shift way: it ha' better been left to the men." The last statement men would probably demur to, but the one before it, that women bear children in a poor make-shift way, surely has some truth in it, if the process is so commonly followed by an injurious laceration of the cervix. Or else obstetric practice is very far from being what it ought to be, and there is an urgent demand for reform and improvement.

But, however produced, it is fortunate that Dr. Emmet has demonstrated a certain method of cure, and hundreds of women have been relieved by him and others guided by his original knowledge. We wish we could write "always safe" conjoined with certain, but facts forbid; already the reviewer knows of two fatal cases following this operation, one occurring in his own practice. An operator therefore should never assert, as some have, that there is no danger in the operation. Dr. Thomas's description of the operation and illustrations are all that could be desired.

Is it not possible that the frequency of the lesion and the necessity for the operation may by some be exaggerated? May not cervices be needlessly stitched, as for a while they were needlessly, in many cases, slit? One of the ablest and most brilliant of London medical journalists recently wrote as follows in the *Louisville Medical News*:—

"When Dr. Sims was first here he demonstrated to the satisfaction of a great many people, and indeed seemed almost to have established it as a course in practice, that a great number of women are suffering from complaints which require that the cervix uteri shall be lacerated to the extent of complete division; and we were under the impression that, according to the well-established experience of Marion Sims and his school, about twenty to twenty-five per cent. of the gynecological patients are required to have the cervix uteri divided in order to be restored to health. But if now we find that at least as many are suffering from complaints which require that cracks, cuts, and fissures of the cervix shall be shut up, it seems as if the greater part of the energies of that most fearfully numerous, highly intelligent, and active class of practitioners who, either as specialists or as family doctors, have a claim to the title of gynecologists, will in future be divided

between splitting up the cervices of those women who yet possess them entire, or uniting with horse-hair or silver wire those which are by nature crushed or fissured."

Behind this correspondent's pleasantry there is an element of truth, and it will be well enough for the select circle of gynecologists occasionally to listen to the voices of the outside world of medicine, though in the quotation given the final statement seems as paradoxical as the advice of a character in "Endymion" as to having "a principle which will carry you through everything;" "you must show that democracy is aristocracy in disguise; and that aristocracy is democracy in disguise. It will carry you through everything."

Commencing on page 363, are five chapters occupying more than one hundred pages, devoted to uterine displacements. We find many additions in the text and several new illustrations, among the latter some new pessaries—fresh devices to keep in place that errant organ the uterus—not so errant, indeed, as the old physicians taught when it wandered, at its own sweet will, in every part of the body—but with its fallings and flexions, its turnings and torsions still errant enough to tax, for a good while to come, the mechanical ingenuity of doctors eager to add to the hundreds of pessaries already made. While Dr. Thomas is an ardent advocate of pessaries, he is very far from the ultraism of those for whom uterine displacements are the alpha and omega of uterine pathology.

On p. 470, Dr. Thomas credits Hippocrates with saying *Propter uterum mulier est.* The expression should be *Propter uterum mulier condita*, while Van Helmont's was *Propter solum uterum mulier est quod est*—a quotation which better suits the connection than the true one of Hippocrates.

The chapters upon *Periuterine Cellulitis*, *Pelvic Peritonitis*, *Pelvic Abscess*, and *Pelvic Hematocele*, are almost the same as the corresponding chapters in the fourth edition. The definition of hematocele, "an accumulation of blood in the pelvic cavity either above or below the peritoneum," we still believe an error. The collection of blood must be intraperitoneal and encysted; outside of the peritoneum such collection is a hematoma.

*Fibroid Tumours of the Uterus* are considered in the thirty-fourth chapter. This chapter is much longer than in the fourth edition, and contains very important additions, not the least valuable of which is a description with an illustration of Thomas's *spoon-saw*. The utility of this instrument is greater than any one who has never used it can imagine. The removal of fibroids by abdominal section is considered, and three methods, viz., Péan's, Schroeder's, and Thomas's, are successively presented. Dr. Thomas states that he has removed the uterus in whole or great part, on account of tumours, seven times, with three deaths and four recoveries.

The thirty-fifth chapter, *Uterine Fibro-cysts*, is almost unchanged from the thirty-second chapter of the fourth edition. *Uterine Polypi* are considered in the thirty-sixth chapter. The author does not mention hot water injections to check the hemorrhage caused by a polypus; we know from experience that such injections sometimes prove very efficient, and certainly we have more faith in them than in the gallic acid or elixir of vitriol, recommended by Dr. Thomas, or any possible astringent administered by the mouth. That astringents thus given control uterine hemorrhage is an assertion which has, borrowing an expression from Disraeli, all the organic weakness of tradition. In regard to instruments for the

removal of intra-uterine polypi, we would be glad had Dr. Thomas referred to a most ingenious one devised by Dr. Eugene Hubert, and presented by him to the *Congrès International* of 1875. It seems to us one of the best instruments ever devised for this purpose.

In the thirty-seventh chapter *Sarcoma* is considered, and also *Adenoma*, otherwise the chapter is scarcely altered from the thirty-fourth of the fourth edition.

The next chapter is upon *Cancer of the Uterus*, and contains several additions, the longest of them being a description of Freund's operation for extirpation of the uterus. In referring to the etiology of uterine cancer, Dr. Thomas states that his experience goes strongly to sustain the opinion of Breisky, Emmet, and others, that epithelioma of the cervix very generally engrafts itself upon a laceration—a very strong argument in favour of the early performance of Emmet's operation.

*Uterine Moles* is the subject of the thirty-ninth chapter—text and illustrations unchanged from the fourth edition. Really, we question the fitness of having the subject of this chapter considered in a work on diseases of women, for it belongs to obstetrics, and is always treated by obstetric authors. It seems very much like poaching upon the province of the obstetrician, and ought he not to warn the gynecologist off? If the latter takes moles now, who knows but by and by he may claim all the disorders of pregnancy from abortion to varicose veins, disturbance of brain or bladder, of stomach or bowels, etc., until the obstetrician's empire is strictly limited to the lying-in room.

But the chapter is here, and a remark or two in regard to some statements would seem called for. As to the so-called hydatidiform degeneration of the placenta, ought it not to be said that this degeneration sometimes affects only a portion of the organ so that the development of the fœtus goes on and a living child may be born? Again, it is asserted that the villi of the chorion undergo a kind of dropsical swelling. This is the theory of dropsy of the vesicles. But is it not now held by some of the best observers, such as Virchow, Cornil and Ranvier, and de Sinéty, that the disease is hypertrophy of the mucous tissue of the villosities? The fluid in them contains mucine, and the vesicular mole has the general characters of a myxoma. Thus we learn from the recent French edition of Naegele and Grenser, from Spiegelberg's *Lehrbuch*, and from Deschamp's thesis.[1]

The chapter on *Dysmenorrhœa* contains several brief additions, scattered in various parts of the text. The succeeding one, *Menorrhagia* and *Metrorrhagia*, is the same, save as to a few minor matters, as in the fourth edition. The concluding paragraph is as follows:—

"I feel very sure that in menorrhagia a great deal of harm results from the frequent use of iron and quinine. These drugs are given to repair the damage done to the blood, but both of them increase uterine congestion, and tend to aggravate the flow."

Dr. Thomas surely does not intend to forbid the use of quinia in antiperiodic doses when the hemorrhage is distinctly intermittent or remittent? Indeed, in some cases of continuous hemorrhage this agent is one of the most efficient remedies.

In the forty-second chapter, *Amenorrhœa*, the following statement is made:—

[1] Des Alterations des villosities choriales, Paris, 1880.

"In accordance with a law of nature, which we recognize in its effects, but cannot explain, once in every twenty-eight days one or more ovules in each ovary burst their envelopes, etc. But do the ovules burst the ovisacs? And is the rule one or more in each ovary? An affirmative to the first question would demand of the ovule, so minute with reference to the Graafian vesicle, an extraordinary power. An affirmative to the second, would suggest a needless expenditure of ova, and assert that which post-mortem examinations of pregnant or of menstruating women have seldom shown; moreover, were the statements true multiple pregnancies would be the rule, rather than the exception."

The forty-third chapter is upon *Uterine Leucorrhœa*. Dr. Thomas has added to the list of causes of this disorder, ulceration with eversion of the cervix, being, of course, one of the additions. So, too, some material additions have been made in the treatment.

The forty-fourth chapter, *Sterility*, is the old story with the exception of the closing paragraph. Dr. Thomas states that sterility implies an incapacity for conception, and is synonymously entitled barrenness and infecundity. But two pages further the definition is contradicted in these words: "Menorrhagia and metrorrhagia may result in the washing away of the ovum after impregnation, and before fixation." Surely there is no incapacity for conception when a woman can have an impregnated ovum! M. Monod justly remarks: "In a clinical view we must say a woman is sterile who cannot have children."[1] Thus it will be seen that a woman may be fecundated, have the capacity for conception, and conceive, and yet be sterile, because always aborting.

*Diseases of the Ovaries* commence with the forty-sixth, and end with the forty-ninth chapter, occupying about one hundred pages. Every one of these included chapters, almost every one of the included pages, bears marks of careful revision. But there are two notable exceptions. On pp. 711, 712, we read "during the past eighteen months three cases of pregnancy at full term have been referred to me as ovarian cysts, and this not by ignorant men, but by very capable practitioners." And precisely the same statement was made on p. 695 of the fourth edition. Surely we have here extraordinary coincidences or slight carelessness! Again, a few lines further on the "placental bruit" is referred to as one of the diagnostic signs of pregnancy. Possibly Dr. Thomas failed to read the following passage in Professor Pajot's[2] very complimentary review of the French translation of his work: "On est étonne de trouver dans le diagnostic differentiel des *kystes* et de la *grossesse*, la mention du *souffle placentaire!* Comment se fait-il qu'apres les travaux francais de ces trente dernières années on en soit encore la en Amérique."

In the very full and excellent account of abdominal ovariotomy, dividing the pedicle by Paquelin's thermo-cautery is not mentioned, and yet it is one of the best of methods. Dr. Thomas insists upon, very justly we think, all antiseptic precautions in ovariotomy; he is also an earnest advocate of the fever-cot to facilitate the application of cold water for the reduction of dangerously high temperatures occurring in patients after the operation.

*Oöphorectomy*, or Battey's operation, is the subject of the fiftieth, a new chapter. Summing up his opinions upon this operation, it may be stated, Dr. Thomas believes it will survive all opposition; that it is attended by grave dangers and doubtful benefits; that it is more difficult and danger-

[1] De la Stérilité chez la Femme. Paris, 1880.
[2] Annales de Gynécologie. March, 1880.

ous than ovariotomy, and requires more surgical skill; that it is of doubtful benefit in large uterine fibroids.

The subject of the fifty-second chapter is *Extra-Uterine Pregnancy.* This is one of the ablest and most interesting chapters in the book, and, by the way, an entirely new one. With a master hand Dr. Thomas has condensed into a dozen pages the best knowledge upon the subject of extra-uterine pregnancy. Having had an unusually large experience in this condition, and having met with extraordinary success in his practice, much more than ordinary value is to be attached to his utterances. So valuable, indeed, do we rate the lessons of his experience that we are almost reconciled to this invasion of the department of the obstetrician. Let us present his reasons for giving a chapter upon this subject:—

"It may even be thought that this subject is out of place in a work upon gynecology, and that it should have been left for one devoted to obstetrics. Its admission here is proof of the fact that I do not share this feeling. Ectopic gestation, although theoretically falling in the domain of the obstetrician, in reality almost always claims the attention of the gynecologist, from the fact that the existence of pregnancy is in these cases very generally not recognized, the patient being supposed to suffer from some pelvic tumour or obscure uterine or ovarian disorder. It is very frequently necessary to differentiate it from a variety of uterine disorders which will soon be mentioned, and even its treatment involves rather a familiarity with the resources of gynecology than with those of obstetrics."

We answer, first, the subject is usually treated, often very fully, in works upon obstetrics; second, uterine pregnancy must be differentiated from certain diseases of the internal sexual organs, or of the pelvic or abdominal cavity, therefore pregnancy belongs to gynecology; third, as abdominal section is equally required in some cases of intra- as well as some of extra-uterine pregnancy, therefore the Cæsarean operation belongs to gynecology and not to obstetrics. We thus fail to see the force of Dr. Thomas's reasoning, but let us repeat, we are very glad to have his chapter on extra-uterine pregnancy; it is needed, and no one could write one better than or as good as this. Furthermore, the very elaborate[1] paper by Dr. Bandl, issued in 1879, in the fifth part of Billroth's *Handbuch der Frauenkrankheiten*, proves that Dr. Thomas is not alone in holding that extra-uterine pregnancy is an appropriate subject for a treatise on gynecology. So, too, prior to this, Dr. Barnes, in his well-known work on diseases of women, had also presented the subject.

Dr. Thomas simplifies the practical study of ectopic gestation by reducing these cases to three varieties, viz., tubal, interstitial, and abdominal.

In regard to interstitial pregnancy, Dr. Thomas states that it is much less dangerous than tubal, and more likely to advance to full term. But Hecker[2] asserts that such pregnancy rarely reaches the fourth month. Then take Baart de la Faille's statistics of interstitial pregnancy, as quoted by Bandl, *op. cit.*, out of seventeen cases only three lasted more than sixteen weeks. In the report given by Dr. Thomas[3] of Hecker's cases of tubal pregnancy, contrasted with the preceding statement, there is hardly a sufficient basis for the assertion of less danger in the interstitial variety, nor is it sustained by a quotation that we will give in a moment or two from Spiegelberg.

[1] Die Extrauterin-Schwangerschaft.

[2] Des divers modes et termination des grossesses extra-uterines et de leur traitement. Par Benjamin Deschamps, Paris, 1880.

[3] A slight error occurs in quoting Hecker's cases. It is stated that "in twenty-six cases rupture occurred in the first month;" it should read in the first two months.

Dr. Thomas gives a table of seventeen[1] cases of which he has seen the results, being ten recoveries and seven deaths. He gives clear statements as to when and how arrest of the pregnancy in the early months is to be effected, and as to the performance in certain cases of elytrotomy and of laparotomy in others. Among the means for arresting the growth of the embryo, no reference is made to electric shocks, originally successfully used in such cases by Bachetti in 1857, and which Spiegelberg rejects, and electro-puncture, which he asserts does good chiefly by the puncture. Considering the great difficulty of recognizing these cases in the early months, Spiegelberg remarks, op. cit.: "The certain diagnosis in the first three or four months belongs almost to the impossible; comparatively few of the entire number will be subjected to treatment. But the pregnancy goes on past the usual period of rupture in tubal and interstitial, and is therefore almost certainly abdominal." Dr. Thomas advises waiting until the effort at labour occurs, and then laparotomy. Velpeau held that the operation should be performed earlier, that is, when the fœtus was viable, avoiding thus a possible rupture of the sac in the last months of pregnancy. Depaul, Charpentier, and Frankel advise operating about the end of the eighth month.

In regard to what has been termed the *secondary* operation—that made at or near the completion of pregnancy being known as the primary—an operation made after the gestation period has passed and the child is dead, Dr. Thomas advises waiting until constitutional disturbances occur.

He concludes this most interesting chapter with the following wise words:—

"Abdominal surgery is too progressive, too steadily advancing, to admit of the application to it of the maxim, 'there is no better way of judging of the future than by the past.' What was reprehensible in abdominal surgery five years ago has become safe and practicable to-day, and it is almost certain that the near future will see cases of laparotomy successfully performed for the cataclysmic symptoms resulting from the rupture of the extra-uterine fœtal cysts. So sure am I of this, that I would now assume laparotomy to be the only legitimate resource in these cases where sufficient delay has been practised to convince the practitioner that death is surely approaching."

The final chapter is upon *Chlorosis*, and is the same as previously given, the suggestion of dialyzed iron being the only addition.

We have now completed our review of this admirable work, a work which is at once a marked representative of American medicine, and reflects the highest honour upon its distinguished author. As we have asserted in past years, still more earnestly do we now assert, it is the best book in the English language upon diseases of women. T. P.

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ART. XXII. — *Medico-Chirurgical Transactions.* Published by the Royal Medical and Chirurgical Society of London. Vol. LXIII. 8vo. pp. lxxvi., 362. London: Longmans, Green, Reader, and Dyer, 1880.

THE present volume of the "Medico-Chirurgical Transactions" contains twenty papers. Of these, nine have already been noticed either in this

[1] Deschamps, referring to one of the cases appearing in this list, the one numbered 14, remarks: On peut toujours émettre un doute sur l'exactitude du diagnostic. A similar opinion was expressed in one of the French journals at the time the case was published, and also in one of our American journals.

Journal or in the *Medical News and Abstract* during the year, as they have appeared in print in the Proceedings of the Royal Medical and Chirurgical Society. Of these, therefore, it is not necessary to give any abstracts, and we shall lay before our readers notices of only the remaining eleven papers.

The first two deal with abnormal developments in men, the first of a *Large Dermoid Cyst found in the Abdomen of a Man*, by WM. MILLER ORD, M.D., and CHAS. BRODIE SEWELL, M.D., and the second of *Malformations of the Genital Organs of a Man associated with persistence of one of the Ducts of Müller*, also by Dr. ORD. Dr. Sewell's patient was a man, æt. 28, "greatly given to hunting," who, on being annoyed only by a boil on the buttock, sent for Dr. Sewell. Struck with the disproportion between the trivial disease and the apparent gravity of the illness, Dr. S. examined him carefully and found fixed abdominal dulness, the result of a fluid, the recti muscles widely separated, dyspnœa and a displaced liver, all of which the patient had attributed merely to increasing stoutness. A trocar was inserted and two pints of fluid, like pea soup, were drawn off. This speedily solidified into a pomatum-like mass, showing hairs and soft epithelial scales in the microscope, but neither hydatid hooklets nor crystals. Within three hours peritonitis set in, and he died on the fifth day. The *post-mortem* showed a large cyst filling a great part of the abdomen, and itself filled with rancid pulpy fat and abundance of hairs, and weighing fourteen and one-half pounds. The contents, although the odour suggested the presence of sweat, contained no butyric acid or sweat products, but were almost absolutely pure fat. The cyst lay behind the peritoneum in close structural relation to the bladder and rectum. After referring to a few similar cases, the authors discuss the possible origin. Rejecting "developmental inclusion," which would require it to hold some relation to the skin and abdominal walls, they hesitate between "fœtal inclusion" and "aberrant development," inclining rather to the latter, founded upon consideration of corresponding ovarian tumours—certainly the most reasonable conclusion.

The second case was under Dr. Ord's care, not in consultation, but in St. Thomas's Hospital, where he died of tubercle. The right testis had never descended lower than the groin, where it was shut off from the abdominal cavity. A large tube (shown in an accompanying drawing) of the calibre of the intestine and distinct from the ureter, was found to extend from the upper part of the kidney to the neck of the bladder. It was probably a surviving duct of Müller.

Mr. HENRY MORRIS contributes an interesting paper on *Two Cases of Carcinoma of the Breast preceded by so-called Eczema of the Nipple and Areola*. In *St. Bartholomew's Hospital Reports* for 1874, Sir James Paget first called attention prominently to the connection of these two disorders—a connection, Mr. Morris thinks, as yet not observed, except in London. Six months before Mr. Morris's paper was written, however, Dr. S. W. Gross presented a similar case to the Pathological Society of Philadelphia (see *Phila. Med. Times*, July 5, 1879, p. 486), and the case was the more remarkable in that it was in the breast of a man. Dr. Gross states also, that he has seen one other such case (*Tumours of the Mammary Gland*, p. 28). Busch, of Bonn, also, in 1877, reported some analogous, but not identical, cases.

The first case was that of a needle-woman, aged forty, who in fifteen years had had seven children and two miscarriages. The youngest child

was two years old. For six years the left nipple had been sore, commencing as a blister, which became red and moist, and gradually melted away, leaving a hole surrounded by a weeping eczematous areola. This remained stationary till just about the time she weaned her last child five or six months before, when it began to enlarge. There was some ill-defined hardness of the breast and an enlarged axillary gland. In August, 1876, the breast and the gland were both removed. In August, 1877, she was delivered of a healthy child. The catamenia had disappeared for eight months before the operation, but returned after it. In October, she was taken ill and died in February, 1878, with disseminated abdominal cancer.

In the second case, a woman, æt. 33, came to the hospital for a small phlegmon over the third left costal cartilage. To her surprise, Mr. Morris paid far more attention to the condition of the left areola than to the phlegmon. She said the nipple had been sore for four or five years, beginning as a scale on a moist surface, which formed and fell again and again, while the nipple gradually flattened and finally came away as a core, the superficial eczema still spreading. Two small nodules connected by a tract of condensed tissue existed in the breast, and one of the axillary glands had been enlarged for eight or nine months. March 1, 1879, the breast was removed, the axillary gland being left; a mistake, which was corrected thirty days after by a second operation, when a later developed cluster of these glands were removed. May 23, she died of broncho-pneumonia. The lungs, liver, kidneys, and other organs were cancerous.

It will be of interest to surgeons to note that in the cancer out-patient department of one London hospital (the Middlesex), from 1872 to 1878 inclusive, Mr. Morris should see such a large number as 305 cases of mammary cancer and 280 in other parts of the body.

Two cases of *Direct Dislocation backwards of the Femur with Fracture of the Rim of the Acetabulum*, are related by Mr. F. S. Eve with good drawings of each. In one of them the head of the femur was above, and in the other below the tendon of the obturator internus. A table of all similar specimens in the London museums is appended, and the cases are carefully analyzed. It is by just such careful work as this that step by step the science of surgery is perfected in details, both of diagnosis and treatment.

Dr. H. Vandyke Carter, of Bombay, follows with a paper of seventy pages on the *Experimental Pathology of Spirillum Fever*, or Relapsing Fever. There were forty-four experiments done in inoculating the disease from the monkey and man, chiefly to the monkey. Most of the experiments were successful, and the author seems to have done very careful and excellent work. Those interested in the subject are referred to the original paper.

That most observers should believe that molluscum contagiosum is a disease of the sebaceous glands is justified, not only by the gross appearances, but not a little by microscopical sections. In an article on the *Non-Glandular Theory of Origin of Molluscum Contagiosum*, Mr. Alfred Sangster presents strong reasons for the opposite side of the question. Even here, however, the sections are not entirely decisive.

One of the most interesting of the papers in the volume is by Mr. Lawson Tait, on *The Antiseptic Theory Tested by the Statistics of One Hundred Cases of Successful Ovariotomy*. At the outset he avows himself a thorough convert to the germ theory, but calls attention to one very impor-

tant fact, hitherto, as a rule, forgotten, in the argument, namely, that while germs will inevitably produce putrefaction in certain infusions, etc., these fluids are all *dead*, and that were germs to possess in *living* fluids the power often imputed to them, surgery would have been long ago an extinct art, since no operation could have been successful until the days of antiseptics. Even a slight cut would undergo putrefaction, or, to borrow Dr. Roberts's excellent illustration, even the needle of a hypodermic syringe would inevitably poison the wound, a line of argument which disproves all by proving too much.

Statistics, to be valuable, must include operations and operative methods, as far as possible, similar, or, better still, identical, and operations of such magnitude that germs would have an acknowledged influence, not to be neutralized by the process of resistance on the part of the patient. For instance, Mr. Wells's increased success with antiseptics, though true as a fact may be fallacious as an argument, for just about the same time he introduced the intra-peritoneal method with the pedicle, thus making an important change in his operative method. Mr. Tait's own cases, in this respect, are of very great value, for while in 26 cases using the clamp with antiseptic precautions, and in 36 cases without antisepsis, he had, respectively, 27 and 25 per cent. of deaths; in 17 cases of the ligature, without antisepsis, he reached a mortality of only 5.9 per cent.; and in 29 cases, with antiseptics, of only 3.45 per cent.—a result which, when placed alongside of those of Mr. Wells, and especially of Mr. Keith, ought surely to set at rest the question of the pedicle. The difference of the last two sets of cases he sets down to an increasing personal experience and skill.

In order to test the value of antisepsis he constructed, from the cases similarly grouped by methods of treatment, what may be called average curves of the pulse and the temperature, *i. e.*, for each morning, and each even of the first ten days, he took the various pulse and temperature readings of all the cases in the group and noted the average. Uniting these average readings gave him the average curves. One important general result he calls attention to, viz., that the temperature curve is less reliable, as a rule, than the pulse curve—a result not to be overlooked in these days, when the thermometer threatens to become a clinical autocrat. The temperature rises not infrequently explosively, the exaltation being without cause, and lasting, it may be, but two or three hours, but the pulse is much more equable, and corresponds to the general and not the local condition of the patient. Especially is this true of the most critical night—the fourth—when, although the temperature will inevitably rise, no fears need be aroused if the pulse be not much disturbed. The tables of pulse and temperature curves are eleven in number, grouping the cases as treated by the extra- and intra-peritoneal methods, with or without antiseptic precautions, etc. The general result may be said to be decidedly in favour of the intra-peritoneal method, but to leave the value of antiseptics at least in doubt—a result that we must confess is a surprise. Mr. Tait's method is just and fair, for it is founded on a physical basis which gives common ground for all cases to stand upon, and thus commends itself to every impartial man. When it has been applied to a sufficient number of cases it will be one of the most valuable clinical contributions to the antiseptic question that has been made. That the end is not yet any one will readily be convinced on reading the January English journals, in which further statistics are given, but none to our mind so accurate and scientific in

method as those of Mr. Tait. Meantime his conclusion is equally judicious "that he will continue to use all antiseptic precautions until a wider experience decides whether they may not all be given up." And again, that the antiseptic system has taught him the lesson "that there is no detail in the performance of an ovariotomy, or in the preparation for it, so insignificant that it may be intrusted to a deputy, and there is no circumstance so unimportant that a neglect of it may not lead to an important result."

Dr. Edw. C. Anderson communicates a short, but very valuable, paper on the *Partial Metabolism by the Liver of Leucin and Tyrosin into Urea*. Usually the presence of leucin and tyrosin has been regarded as diagnostic of acute yellow atrophy of the liver, or of its concurrent atrophy in typhus, smallpox, and some other exanthemata. Having discovered their presence and subsequent disappearance in a case of jaundice with recovery, Dr. A. made over 500 analyses within two years, and has proved their presence in 33 cases, in some of which the liver and spleen were diseased; in others there were cardiac disease, rheumatism, phthisis, pneumonia, bronchitis, and other maladies.

Messrs. Alfred Willet and Wm. J. Walsham follow with a very full account of a remarkable *Congenital Malformation of the Spinal Column, Bony Thorax, and Left Scapular Arch in the Body of a Woman*. The dorsal spine had, if anything, a slight anterior curve with a left lateral curve, four and a half of the dorsal vertebræ were missing, five ribs on the right side and four on the left were missing, the left clavicle was deformed, and, most curiously of all, the scapula, itself much deformed, was connected to the sixth cervical vertebra by a broad bridge of bone. The muscles and vessels are described, and similar bony malformations hitherto undescribed are carefully compared with the present specimen. The authors regard the spinal and costal malformations as due, not to irregular ossification, but to an earlier defect in the development of the mesoblastic element constituting the vertebral and lateral plates of the embryo. The explanation of the unique malformation of the scapula, to which they incline, is, that it is a scapular element, an overgrowth of the normal epiphysis of the posterior border, to which there is no analogy in the lower animals until we reach the placoid fishes.

Mr. Fred. James Gant relates a very instructive case of *Compound Fracture of the Femur Twenty Years after Excision of the Knee-Joint for Disease, the Line of Fracture being transversely one inch above the Bony Union*. For the details the reader is referred to the paper.

As a fit sequel to his opening paper on Cancer following Eczema of the Nipple, Mr. Henry Morris relates a *Case of Epithelioma of the Neck following Chronic Skin Disease*. The patient, a woman æt. 60, had had for nine years a probable eczema, or, at least, some similar form of skin disease on the right side of the neck. A blow caused some irritation, for which caustics were used, and in a few weeks a distinct epithelioma was developed. A firm bronchocele had displaced the carotid to the posterior border of the sterno-mastoids; a fact which had deterred some surgeons from operating. But Mr. Morris adopted an ingenious method of showing the want of connection between the tumour and the artery. Placing the patient on her back, she was told to lift the head. The attempted movement being resisted, the sterno-mastoid lifted the tumour free from the artery. The tumour was removed in September, 1876, the external jugular vein being tied. In March, 1878, she returned and had the growth

removed a second time. During this operation the internal jugular gave way, its walls being involved and softened, and was tied above and below. The recovery was good, and in July, 1880, she was known to be alive and well.

Mr. Morris then discusses the subject of the ligation of large veins, like the jugular, and quotes at length from Dr. S. W. Gross's article (see the numbers of the *American Journal of the Medical Sciences* for January and April, 1867). His conclusion is in favour, at least in the neck, of the simple deligation of the vein, without simultaneous occlusion of the corresponding artery, as proposed by Langenbeck. The origin of the cancer from the long-continued irritation of the skin is another, and a very strong argument for the local origin of such malignant growths, an opinion, we judge, which every year is making more probable and more widely believed. W. W. K.

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ART. XXIII.—*Observations on the Cæsarean Section, Craniotomy, and other Obstetric Operations, with Cases.* By THOMAS RADFORD, M.D., F.R.C.P.Edin., F.R.C.S.Eng., etc., Honorary Consulting Physician to St. Mary's Hospital, Manchester, Eng., etc. Second edition. 8vo. pp. 225. London: J. & A. Churchill, 1880.

THE first edition of this work appeared in a pamphlet of 68 pages, with an appendix and set of plates nearly doubling its text and capacity, in 1865. "Further Observations," in a supplementary paper of 21 pages, were published in 1868. These constitute together a small volume of 152 pages. The first part of this edition contains a tabular record of 77 Cæsarean cases; and the second, 21, making 98 for the whole. In the work under review, the author has added 34 additional cases, bringing up the list to 132; to which the reviewer will add two more, one of them successful, making in all 134; with 24 recoveries and 110 deaths.

Manchester has for a century been at times either the battle-ground between the Cæsareanists and craniotomists, or the position of defence for the advocates of the Cæsarean operation as one of election. This has arisen, in a measure, from the early advocacy of Hull, and from the fact, that in this section of Great Britain, the necessity for one or the other mode of delivery, has so often presented itself to the accoucheur. Dr. Radford has been a firm believer, for many years, in the moral necessity for the elective preference that should influence the obstetrician in deciding in favour of gastro-hysterotomy as against infantile destruction; and at the age of 87 he has again assumed the task of defending the Cæsarean section against craniotomy, cephalotripsy, and the various destructive measures for mutilating and extracting the fœtus. Sixty-one years ago, when a young practitioner of 26 years of age, Dr. Radford assisted Mr. Morris in his first Cæsarean experience; since which time he has once operated and four times assisted as accoucheur, making in all six cases, saving two women and three children: the last case was in November, 1851. He has also been a witness to other cases, one in 1867.

Owing to the age of the author, he has not attempted to rearrange his tables in the introduction of new cases; or to do this with his text, which is somewhat confusing to the reader. The former are in three parts, covering chronologically much of the same periods. The analyses of the

three tables are also separate, and the reader is obliged to add them together. We shall therefore treat the tables as one collection of 134 cases.

In general terms, the causes of dystocia arose from malacosteon in 56 cases, rickets in 32, exostosis in 6, malignant tumours in 15, non-malignant in 8, pelvic deformities from fracture, dwarfed growth, etc., in 10, hydatid cyst in 1, not stated in 5, puncture in ovariotomy in 1, = 134. Of these cases, there recovered after malacosteon 6, rickets 6, exostosis 4, malignant diseases of cervix 4, disease of spine and hip-joint 1, deformed pelvis from fracture 1, puncture of uterus in ovariotomy 1, and not stated 1, = 24. Seventy-eight children were removed alive.

The time in labour of the 24 women saved was as follows: "*early*," one; 12 to 14 hours, one; 18 hours, two; 23 hours, one; 24 hours, two; 30 hours, one; 34 hours, one; 35 hours, one; slight pains for 2 days, two; ditto for 2 or 3 days, with membranes ruptured a few hours, one; ditto with membranes ruptured 12 hours, one; labour 60 hours, one; 4 days, one; 5 days, one; 6 days, one; 12 days, one; not begun, two; and time not stated, three.

*Operations on the first day of labour.*—Duration 2 hours to 12, eighteen cases with but one saved; 12 hours to 24, eighteen cases with six recoveries. *Operations on the second day* 22, with three saved; *on the third day* 13, with three recoveries; *on the fourth day* 8, all fatal.

Compare this, with the results in our own country, and we find 8 saved out of 11 in operations after labours of 2 to 12 hours. In addition to this, there are cases not timed definitely, but noted as "*early*," "*in a few hours*," etc., amounting to 12, with 7 recoveries. *Operations on the second day* (U. S.) 19, with 6 saved; *on the third day* 18, with 10 saved. The improved proportion is accounted for, by the fact, that this only represents the cases noted in days or hours; there having been a large number of protracted labours not timed, which proved fatal as a general rule after the operation. *On the fourth day* 15 operations with 2 saved. The effect of delay is well shown by the operations on rachitic dwarfs. On the first day of labour 9, saving 5; on the second day 7, saving 2; on the third day 1, lost; and on the fourth day 5, all lost.

Dr. Radford is fully impressed with the importance of operating early, although forced to admit that very early sections have been highly discouraging in his own country. There appears to be a very marked difference in this respect in our two countries. We have attempted to account for this in a former paper, attributing it to the climate, poverty, previous or present disease, and in some instances to intemperance. The fact, that nearly one-half of the subjects in Great Britain and Ireland were sufferers from malacosteon, when there was not one in the United States, shows the more healthful influence of our climate and hygienic conditions upon parturient women. Intemperance may perhaps not be as prominent a factor in increasing the mortality of the operation as we had supposed; but it is true that the lower classes of women here, as a rule, drink much less malt liquor and spirits than in England, and that such habits make a bad preparation for surgery. In Dr. Radford's six cases, intemperance was not to blame for the losses by death.

*Craniotomy.*—Our author takes very decided ground against infantile destructive delivery in all its forms as an elective expedient, and especially in subjects known, from a former delivery by the same process, to be incompetent to bear a living child. He says, page 65:—

"But in a second pregnancy when they [the parents] are fully acquainted that an unmutilated infant cannot be born, the question stands on very different social and moral grounds. The practitioner is here placed in a most responsible and trying position when called upon to decide whether he ought, time after time, or thus repeatedly, be made the agent to take away life. I entertain the fullest conviction that a great proportion of our profession have most conscientious scruples to repeat this revolting operation on the same woman. This destruction of infants, in my humble opinion, can be justified on no principle, and is only sanctioned by the dogma of the schools or by usage. . . . It is by no means to be understood that the life of the infant must never be sacrificed to save the mother; on the contrary, I have already enumerated cases in which craniotomy ought to be performed as an operation of election; but it is not right to destroy the infant on the unfounded assumption that the mother could alone be saved by it; a deduction altogether untrue and unsanctioned by statistical evidence.

"The life of the woman is not, either relatively or comparatively, always of the same value. If she be afflicted with a serious disease, or labouring under some incurable malady, being unfit, or unable to discharge her domestic and her social duties, which performance can alone render her life desirable to herself or to her friends, then, under such circumstances, the infant's life ought not to be sacrificed for the mere ideal chance of prolonging her miserable existence, which is a positive evil to herself."

This ruling of the author applies with special force in his own country where the Cæsarean section has been repeatedly performed on women incurably diseased with malacosteon, cancer, etc., numbering in all sixty-nine cases. In our own land it has but little application so far as our past record would indicate, having had no malacosteon or cancer in any case operated upon.

"When the contingent hazards of craniotomy and the risk of its abuse are considered, and we know that the act is the sacrifice of life, and that this awful catastrophe must be often repeated in order to carry out the abstract proposition 'to save the life of the woman by destroying the infant'—when we remember the difficulty which in extreme cases is experienced in performing it, the cruelty it inflicts, and many other evils consequent upon it—we may truly wonder that professional men should allow their minds to be haunted by an imaginary Cæsarean spectre, and be so obscured in their own moral and social responsibility. Why should the obstetrician stand in such an unenviable position, not only as an accessory, but, *ipso facto*, the agent? Again, I ask, ought he to be called upon, and ought he to consent to victimize poor helpless infants in successive pregnancies, in numbers which make one shudder to recount?" (page 66.)

"Woman naturally is mild, kind, and humane. She is endowed with great fortitude and undoubted courage. She has generally a great desire for offspring, and has a great love for children. Then how can we suppose that any woman with a well-regulated mind, if fully aware of her responsibility, could willingly be a consenting party to the repeated destruction of her unborn infants? According to my own knowledge the case is otherwise. I feel convinced in my own mind that there would scarcely be a woman to be found who would not suffer any amount of bodily pain to save her infant." (page 67.)

We can readily agree with the author upon all these points; but there are two conditions under which the love of offspring and value of the life of an infant very frequently disappear from the heart of a pregnant woman. Grant that she will endure pain and suffering to save her infant; will she be willing to run the risk of four to one, as in England, of losing her own life and leaving the infant behind, in order that it may live? Women in labour are anxious to preserve their children, but maternal love has this element of selfishness, that the mother wishes to live, and enjoy the pleasure of rearing the infant. Look at the numbers of abortions criminally produced; of infanticides of newly born children of shame; of the

practices even of married women to prevent their infants in utero coming to maturity; and we find that the love of offspring fails when the life or fair fame of the mother is very seriously endangered.

Fortunately there are some exceptions, or there would be no *elective* Cæsarean operations. In our own land, where 75 per cent. of early and elective operations are successful, there can be little excuse for a woman declining to endure gastro-hysterotomy, and demanding a repetition of craniotomy, after she has been made aware that if she becomes pregnant she cannot give birth to a living child. It is evident that society needs a moral reformation on the valuation of intra-uterine life, and the rights of the unborn infant to an extra-uterine existence, and opportunity for development. The more we examine into the moral aspect of craniotomy, the more must we become convinced, that a mother with a contracted pelvis has no right to beget children, and then devote them to destruction to save herself; when it is possible by premature delivery, or gastro-hysterotomy, to save both herself and her offspring.

Dr. Radford closes the first part of his volume as follows: "Deep reflection, and a strong sense of humanity, have induced me further to declare that the Cæsarean section should be generally performed as an operation of election; and that craniotomy should be as far as possible abolished, and ought only to be performed as an operation of necessity." (page 72.)

The exceptional cases mentioned are: 1. When the infant is ascertained by the stethoscope to be dead. 2. In rupture of the uterus where the infant is generally lost. 3. In a first labour, with a contracted pelvis, where the fœtus cannot be delivered unmutilated, "and also in those cases in which the mischief has taken place after the woman has naturally borne one or more children." 4. In cases where turning is quite impracticable, as here the infant is almost always dead. 5. In some cases of protracted labour where the pelvic organs have already sustained such injury by pressure, that it would risk the life of the woman to deliver by the forceps; and 6. In extreme hydrocephalus.

We take issue with Dr. Radford on some of these points, as drawn from the experience of our own country. Craniotomy should never be performed after rupture of the uterus, as abdominal section offers a much safer mode of removing the fœtus, and an opportunity to cleanse the abdominal cavity and close up (if required) the uterine rent. In cases of impaction, where turning is impracticable, the Cæsarean section is preferable to embryotomy, as here we have only the interests of the mother to look after, and she is safer under this form of operation, which in America has saved seven cases out of ten. Embryotomy, even by its advocates, is admitted in this condition to be one of the most difficult and dangerous of all obstetric operations.

The Cæsarean operations of the United Kingdom are credited as follows: to England 103, Scotland 21, and Ireland 10, = 134. Lancashire has furnished a large proportion of cases (28), and is only second to London.

Case 97, of the table, the author says stands "quite unique." It is the case of Mr. T. Spencer Wells, in which he perforated the uterus in mistake, in an operation for ovariotomy. In this surmise the author stands in error, as Dr. W. H. Byford, of Chicago, did the same thing in 1878, in the case of an unmarried young lady. Both of these subjects recovered.

*Causes of Death.*—Unfortunately Dr. Radford's full tabular collection has not been published, and his printed tables give no column on this point. In his text, he gives the cases of peritonitis and exhaustion for the second

and third tables, but not for the first (seventy-seven cases); and there is no summary in the former edition: the combined second and third tables give *exhaustion* 20 deaths, and *peritonitis* 15.

*Chloroform.*—Dr. Radford objects, decidedly, to anæsthetics by inhalation in gastro-hysterotomy. He says: "Chloroform diminishes the energy of the uterus, and induces relaxation; and, therefore, on this ground its administration is here contra-indicated. Its anæsthetic agency in subduing pain is not to be compared to the dangers which may ensue. . . . Vomiting has taken place in most of the cases in which chloroform had been administered. It has varied in degree: in case 96 it was incessant until the fourth day; the abdominal wound was burst open; a knuckle of intestine was protruded; and fresh sutures were required." (page 109.)

We have especially referred to this subject in a paper prepared ten years ago, and are still more convinced by the additional experience collected, that without anæsthetics the Cæsarean operation has been decidedly less fatal in America than with them, as vomiting and uterine inaction are very much more frequent after chloroform and other anæsthetics have been inhaled. As the incision of the abdomen is particularly painful, and more especially through the skin, local anæsthesia with ether-spray by Richardson's apparatus is all that the operation requires. Care should be taken not to spray the uterus, as the ether acts as an irritant, and excites the organ to violent contraction, interfering with the removal of the fœtus, and endangering laceration. The wound, according to an observation by Dr. Radford, in an operation under Dr. Roberts, of Manchester, in 1867, is inclined to gape open, as shown very decidedly by the autopsy.

*Uterine Sutures.*—These have been used in about the same number of cases in the United Kingdom and United States, but with much better success here. Dr. Radford formerly opposed the closure of the uterine wound very decidedly, but recent cases ending successfully have influenced him to doubt somewhat the correctness of his first impressions, although he still appears to lean towards his former view. He says: "But as regards the evidence to be obtained on the two sides of the question, it would I think preponderate in favour of their non-employment. Notwithstanding this may be so, yet I think the subject demands further consideration." (page 112.)

Dr. Radford is inclined to favour the long-tailed uninterrupted suture of Mr. Spencer Wells, with the end brought out of the vagina, so that the silk may be removed, when no longer required, by traction. In this country sutures have been used 20 times, with 7 recoveries. Ten of these operations were under silver-wire, and five of them succeeded, the first woman now living, having been sutured in December, 1852. The reviewer has as decided views the other way, and believes with much confidence in the virgin-silver-wire interrupted suture twisted twice, turned down over the line of incision, and cut off below the second twist. With one-half of the cases saved—one woman twice; another after ten days' labour; a fourth case after seven days; and a fifth, forty hours—I think we have reason in America to recommend the method with some degree of satisfaction and confidence. It is now a question for the future to decide, whether it would not be advisable in all cases, early as well as late, to use the wire suture, and secure the uterine wound against the danger of gaping and allowing the exit of lochia. It is very certain that carbolized catgut has proved a complete failure, and never should be used in closing the uterine incision.

*Time for Operating.*—The author recommends that the operation should

be commenced "as soon as the labour is declared; before or immediately after the membranes are ruptured." Dr. Greenhalgh, who has operated eight times with one success, recommends commencing prior to the full period of gestation, as he has himself done in two instances, both cases of malignant disease, saving one: his reasoning is, that at the completion of the eighth month "the vessels are smaller, the contractile power of the uterus greater, and the liquor amnii relatively in greater proportion to the size of the child." In the event of operating at this period, care should be taken to preserve an open cervix and os for drainage. In 1867, Dr. J. Braxton Hicks operated at 8½ months, at Guy's Hospital, first inducing uterine contractions by the use of ergot a few hours previously; but the patient died. Her death was attributed to closure of the os and escape of fluids into the peritoneal cavity. As in some cases of pelvic collapse the os cannot be felt, and the membranes do not rupture until labour has a long time existed, the time of rupture cannot be regarded as a rule to go by in operating. Labour-pains should not be present more than from two to ten hours in an elective operation, and especially in dwarfed subjects.

*Position of the Placenta.*—"Its position in sixteen cases was as follows: in eight it was placed anteriorly; in seven of which it was central, in one a little to the left. In eight cases it was fixed on the posterior part of the uterus; in three of which it was centrally situated; in two it was toward the fundus; in one to the left; and in two to the right side." (page 115.)

Before operating, the stethoscope should be used to ascertain by the placental souffle where the placenta is located. One may, however, be deceived in this, as was Dr. Richardson in his Porro-Müller case, the *bruit* being heard more distinctly on the left than the right side; but the incision revealed that it was central in front.[1] In a case like this, the placenta should be rapidly peeled off on one side and the fœtus removed: it ought not to be incised, or entirely peeled off: when ascertainable, the side least covered should be separated. It is believed that such cases are not well adapted for closing by suture, but this may be mainly theoretical, as the suture is far from being as yet fully tested.

The remainder of Dr. Radford's book is taken up with remarks on the various instruments used in reducing the fœtal head, and a record, *in extenso*, of seven Cæsarean cases; with short references to Porro's operation, and laparo-elytrotomy. He quotes Blundell on "*Extirpation of the Puerperal Uterus*,"[2] and says: "the above quotation with many others contained in Dr. Blundell's observations, point out most clearly that he ought to be strictly considered as the pioneer of abdominal surgery. Porro doubtless based his operation on Blundell's suggestion." (page 223.)

Dr. Radford makes a very natural conclusion here, but it so happens that Prof. Porro did not know of Blundell's experiments until after his own operation; or those of Giuseppe Cavallini,[3] of Florence (1768), who preceded him by fifty-four years. Dr. Porro experimented on animals himself, as Cavallini and Blundell did, and applied the knowledge gained by the said experiments in instituting the method which bears his name. The author states that there have been 59 Porro operations. The correct number reported is 65, with 27 recoveries. There were 24, with 9 deaths in 1880.

R. P. H.

[1] See number of this Journal for January, 1881.
[2] Researches, Physiological and Pathological, p. 27, 1823.
[3] Master of Surgery in Santa Maria, Nuova Hospital, of Florence: he experimented on dogs and sheep.

ART. XXIV.—*Clinical Lectures and Cases with Commentaries.* By HENRY THOMPSON, M.D., M.A. Cantab., F.R.C.P. London, Consulting Physician to the Middlesex Hospital. 8vo. pp. x. 197. London: J. & A. Churchill, 1880.

THIS is a collection of clinical lectures and reports of miscellaneous medical cases which have for the most part already been published in the "Transactions of the Clinical Society of London," and the various London journals. The lectures are all interesting and written in very good style; of the two not already published we will only allude to one in which Dr. Thompson, with great frankness, details two fatal cases of ascites in which death was accelerated by paracentesis. They illustrate the fact that although paracentesis is of undoubted value in saving or prolonging life, there is also a dark side to the picture.

The first case shows the familiar picture of dropsy from cirrhosis coming on in an intemperate, syphilitic subject, in this instance complicated by interstitial nephritis. He was tapped on the day of admission, and, it is stated that, although on the next day the abdomen was diminished in size and reduced in tension, there was an increase of œdema in the penis and scrotum; the urine at this time, although loaded with lithates, contained no albumen or blood. The abdomen continued slowly to increase in size until three weeks after the operation, it measured two inches more than upon admission, the urine being occasionally albuminous and only slightly increased in volume, and the patient suffering from cough, nausea, vomiting, and diarrhœa. A second operation was performed and copaiva administered, and although the flow of urine was greatly augmented, fluid accumulated so rapidly in the abdomen as to necessitate in a little over two weeks a third operation.

After this the abdomen rapidly filled, the cough became persistent and troublesome, the urine uniformly albuminous, and the patient extremely feeble. It is stated that at this time the patient seemed "instinctively conscious of an utter inability to bear an operation," and that it was deferred "for many weeks." "At last, after a brief show of amelioration in health and strength, he regained confidence and gave his consent to his own destruction as it proved. Ninety-six ounces of straw-coloured fluid were drawn off, and for a time he experienced a feeling of decided relief and passed a good night; but in the morning a great change is reported. He is now stupid and speechless, he cannot be roused to answer questions, neither can he put out his tongue when asked. He is restless and tosses his limbs about incessantly. On the morning of the 22d, his respirations were hurried and his pulse almost imperceptible; in the afternoon he died." At the autopsy, four pints of fluid were found in the abdominal cavity. In this instance the cause of death was undoubtedly from the draining of albumen, from an already greatly enfeebled subject, and, from the notes of the case, it does not appear that there was any urgent necessity for the operation.

In the second case, although death was also due to the operation, the manner of causation was different.

The patient was habitually intemperate, had suffered for ten years from winter cough, and had had three attacks of rheumatic fever followed by cardiac complication and granular degeneration of the kidney. Two weeks after his admission he had an eruption of purpura, and two days afterwards,

during the persistence of the purpuric eruption, paracentesis was performed. "Over two ounces of pure blood came away first, and then four pints of straw-coloured fluid, the last portion of which was stained with blood." Within twelve hours after the operation he became semi-conscious with stertorous breathing, the abdomen filled with fluid, measuring one-half inch more than before he was tapped, and within twenty-four hours he became comatose and died. At the autopsy, eight pints of dark blood-stained fluid were found in the peritoneal cavity, mixed with a small sediment of black clots; the peritoneum was ecchymosed, liver cirrhotic, kidneys granular and contracted, one containing a large cyst, and the lungs pigmented, œdematous, and engorged.

Better illustrations could not be desired of the danger attending the routine and thoughtless performance of paracentesis for abdominal dropsy, an operation trivial in itself, but one of which we have here two examples of its capability of causing death. In neither instance does there appear to have been any very threatening symptoms from the mere presence of fluid, while the operation was distinctly contraindicated in the first case by the extreme debility of the patient, and in the second by the existence of purpura or hemorrhagic diathesis and advanced kidney and lung disease.

Among the "cases with commentaries," reported by Dr. Thompson, there are only three which have not been previously published.

The first of these is a case of cerebral rheumatism which terminated fatally with the symptoms of collapse, the temperature, the evening before the fatal termination falling to 95.1°.

The next case is one of acute rheumatism with cerebral symptoms and a high degree of pyrexia which was successfully treated with prolonged cold bathing. The aggregate fall of temperature during and immediately after the bath varied from 9.1° to 5.1°, in one instance the body temperature being reduced to 95.4°. The temperature of the bath was never above 90° in the beginning and never below 58° at the end, with one exception when the thermometer stood at 74° at immersion. The damp sheets were allowed to remain around the patient for some time after the bath, this being recommended by Dr. Thompson to prevent the rise which often occurs when the patient is put dry to bed, particularly when he had been well rubbed with flannel.

The last of the three unpublished cases is one of diphtheria in which death was caused by pyæmia and peritonitis. After a moderately severe attack of pharyngeal diphtheria, lasting ten days, and in which no striking departure from the ordinary course of such cases appeared, all the symptoms moderated, the pulse ranging from 84–96 and the temperature remaining at about 99°. This amelioration lasted for a week; towards the end of this period the discharge from the nose, which had never entirely disappeared, became muco-sanguineous and dried in crusts on the right nostril. At the end of this week the temperature rose to 104.2° and the pulse to 126, the throat symptoms increased in severity and death occurred ten days later with all the symptoms of pyæmia and peritonitis.

R. M. S

ART. XXV.—*St. George's Hospital Reports.* Edited by THOMAS TILLYER WHIPHAM, M.B., F.R.C.P., and THOMAS PICKERING PICK, F.R.C.S. Vol. X. 1879. 8vo. pp. xiv. 662. London: J. & A. Churchill, 1880.

THIS volume contains the usual reports of the various departments of the hospital, some clinical lectures, a memoir of the late Thomas Tatum, F.R.C.S., and eight original articles. The last occupy one hundred and forty pages. It will be more satisfactory to notice first the reports and papers of a medical character, then those having a surgical bearing.

The *Report of the Medical Registrar*, by Dr. OWEN, containing one hundred and twenty pages, is very elaborate, and is remarkable in having appended an index of its contents. He gives tabulated histories of instances of general tuberculosis, aneurism, cerebral hemorrhage, heart disease, and granular kidney, in which autopsies were obtained. These greatly enhance the value of the paper. There are also similar analytical tables of the typhoid fever, chorea, and pneumonia patients. These all show much labor in preparation, but it is to be regretted that the author did not see fit to give the deductions and generalizations to be drawn from the various series. Two striking features in the typhoid table are the frequent presence of albuminuria, which would often be found in other hospitals if more carefully looked for, and the large amounts of alcohol used in the treatment. Twenty-two and thirty-three ounces of brandy a day seem large amounts for even a case of typhoid. However, as the patients who received these quantities recovered, we can only complain of the expensiveness of the cure. There are seven cases of diabetes mellitus spoken of, but in none was there used nitrate of uranium, which, in one case (that of Dr. H. A. Wilson, *Medical Bulletin*, Phila. March, 1880), within our knowledge, seemed to be of great efficacy. An instance of so-called diabetes insipidus in which a trace of sugar was found, was treated, rather ineffectually, by iodide of potassium during ten weeks. The use of ergot in this disease has been attended with sufficient benefit to warrant its use in all cases. An interesting instance of paracentesis of the pericardium is referred to, but no details are given, except that the man, aged sixty-three years, was temporarily relieved and died ten days subsequent to the operation. A more general adoption of this operation will doubtless follow the repeated successes that are found to accompany its performance. An interesting case of aneurism of the anterior communicating artery of the brain is recorded, which should have been studied with special reference to cerebral localization.

The *Reports of the Post-Mortem Department* for 1878 and 1879 by the curator, Dr. WILLIAM EWART, are models of accuracy and full of scientific value. They give statistics of the cases of death, and in many instances furnish the clinical history of the patient as well as the post-mortem appearances. This work is better done than in the average American hospital. The number of autopsies obtained was very great. In 1878 there were three hundred and eighty deaths, of which three hundred and seventeen were examined, while in 1879 there occurred three hundred and sixty-one deaths, in which two hundred and ninety-six post-mortem examinations were made. The classification adopted by the author enables the reader to find with ease the notes of any special disease. Some might take exception perhaps to the position of diabetes, which is placed

under diseases of the urinary organs. Many interesting cases are recorded, a few of which only can be mentioned in this connection. An instance of fatal diphtheritic paralysis will be found on page 250; and under cardiac affections are noted a case of syphilitic deposits in the heart, and a curious case of angina pectoris apparently depending on a torn aortic valve falling against and shutting the orifice of the left coronary artery (p. 264). Other rare conditions are fatal intestinal perforation due to typical albuminuric ulceration (p. 275), abscess behind the peritoneum following fracture of the rib, which had caused puncture of the ascending colon, and probably of the pelvis of the kidney (p. 248), and inflamed dermoid cyst of the cerebellar membranes communicating with a subtegumentary abscess by a normal venous orifice through the skull (p. 288). An instructive account of the case of pericardial tapping, briefly mentioned in the Medical Registrar's Report (p. 91), is given on page 313.

The *Report of the Obstetrical Department*, by Mr. Geo. Walker, should perhaps be called that of the gynæcological department, since it deals with ovarian, uterine, and vulvar affections, and not with pregnancy and labour. Of the three ovariotomies recorded, which were all done antiseptically, two were fatal. In one of the cases, colloid material was found in the peritoneal sac, due to the previous rupture of one of the cysts. A table of twenty-eight cases of bilateral incision for the relief of dysmenorrhœa and other conditions, supposed to be due to stenosis of the external mouth of the uterus, is given. The results are believed by the author to have been satisfactory in most cases.

The *Notes from the Department for the Treatment of Diseases of the Throat*, by Dr. T. Whipham, consist principally of elaborate tables of the cases transferred to the author for the purposes of clinical instruction. The cases of laryngitis from inhalation of dust, from the abuse of alcohol as a beverage, and from unhealthy occupations, are especially instructive. The instances of laryngeal phthisis are numerous, but in no case, I believe, was tracheotomy resorted to as a method of treatment. This operation has recently been quite earnestly advocated as a means of relief by giving rest to the larynx. Tonics, benzoin inhalations, and rhatany lozenges are evidently favourite remedies with the author for the various forms of inflammation of the larynx. All these reports would be much more valuable if there was an attempt at generalization in them. The bare record of cases is of little value to the general profession, and of not much interest to the staff of the hospital itself.

The first medical paper, which is not a mere report of one of the departments of the institution, is that entitled *An Epitome of Fifty Cases of Ichthyosis*, by George Gaskoin. This contains complete notes of each patient, and is a continuation of the fifty other cases reported in the preceding volume. The author has evidently had in a few years past an extensive opportunity of treating this intractable disease, or deformity as some term it, but does not seem to have had much better success in its management than usual. It is recognized by all as being susceptible merely of temporary relief rather than of cure. He found it to occur about equally in the two sexes, which differs from the experience of some writers who attribute it especially to men. His elaborate study of family histories is interesting; he states that his cases were in one-half the instances hereditary. It is generally considered a congenital affection, but this is not, in his opinion, invariably so; and he supports his belief by cases

in point. The discussion of diagnosis and treatment differs little from that found in the ordinary text-books, except perhaps in the statement that too much washing of the skin may be indulged in as a means of relief. Some cases of the disease do not bear frequent applications of water and too much bathing sometimes tends to aggravate the condition.

Mr. HOWARD BARRETT contributes a good paper, on *Some Cases of Tubercular Meningitis*, in which he refers to the anomalous clinical history of many cases of this form of intra-cranial inflammation. Three cases were members of one family, and the remaining two were brothers belonging to another family. In one instance the patient, a girl of twenty-one years, died suddenly with unusual symptoms, and tubercular meningitis of the vertex and base was found. The greater extent of inflammation was situated in the former region, which makes the case a remarkable one.

The treatment believed to be best was belladonna and iodide of potassium in full doses, with brandy and a simple diet such as milk, cream, and bread. In the opinion of the author the disease may exist without tubercles being actually found at the autopsy. In this he has the support of many authorities, both English and American. The article is written in a scientific, logical manner, and the analysis of cases is excellent. The criticism to be made is the undue length and minuteness of the clinical notes.

The most valuable of all the medical papers is that on *Herpes Gestationis*, by Mr. WYNDHAM COTTLE. He reports a case of this rare disease occurring under his own observation, and also one observed by Drs. Weaver and Hilton Fagge; and then, giving a brief review of the literature of the subject, finishes his masterly article with a page devoted to the conclusions founded on a study of all the recorded cases he has been able to collect. The author shows himself to be keenly sensible of the requirements of a good medical essay, and has committed but one error—the burying of his work in a volume of hospital reports instead of giving it the currency which it would have obtained in one of the prominent medical journals. The article should be read by every one interested in dermatology, and by all those who enjoy good medical writing.

WILLIAM BRUORTON contributes a short account of a *Case of Trismus Infantum*, which was apparently cured through the agency of from one to one and a quarter grain doses of chloral every two hours. This drug is now pretty generally recognized as an agent which gives quite frequently good results in this intractable affection.

The last two articles are by J. HEWETSON BERTOLACCI, on subjects pertaining to diabetes mellitus. One describes a *Modified Method of Quantitatively Estimating Diabetic Sugar by Fehling's Volumetric Solution*, and concludes with the *Description of a New Urine-meter;* the other gives the *Notes of a Case of Diabetes Especially Illustrating the Effects of Codeia, Carbolic Acid, and Salicylic Acid.* The modified method is preferable to the ordinary plan of dropping the diluted urine from the burette into the hot copper solution, because it gives, as the indication of completion, a contrast of colour rather than a fading of colour. The diluted urine is heated, and the Fehling allowed to drop from the burette into the hot urine. This enables the experimenter to tell with more nicety the moment when the sugar has reduced the cupric oxide, and shortens the calculations requisite to determine the amount of sugar per ounce. Any who have laboured through these analyses amid the busy work of a hospital will appreciate the advantages claimed for the modified process.

The new urine-meter is not a urinometer to determine specific gravities, but a graduated vessel with ingenious accessories to measure accurately, rapidly, and in a cleanly way the amount of secretion passed by the patient during the day and night.

The case reported as treated by codeia, carbolic acid, and salicylic acid, during different periods, is instructive as showing the inefficacy of these agents as therapeutic agents; and remarkable in that carbolic acid, given during thirty-three days in increasing doses until nineteen grains three times daily were taken, did not produced distinct toxic effects. The urine on several occasions became a little dark, but no symptoms of annoyance supervened until, just before the drug was omitted, colicky pain was experienced.

We will now notice the surgical portion of this volume. *The Report of the Surgical Registrar*, by WILLIAM H. BENNETT, F.R.C.S., shows that the mortality during 1879 in the surgical wards was 5.37 per cent., including seventeen deaths that occurred within twenty-four hours after admission. These immediate deaths should hardly be included, as they were most probably cases that died from the severity of injury without reference to the hospital or treatment. The paper gives records of the usual run of surgical cases, and concludes with tables of cases of amputation, compound fractures, lithotomy, strangulated hernia, and various operations. These tables and similar ones throughout the volume would be more convenient for reference, if a head line stating the nature of the cases tabulated were put upon every page instead of only at the beginning of the list. When the tables include many pages it is difficult to find the special class desired, since the heading is given but once. Interesting histories are found scattered through this report; for example on pages 157–163, four aneurisms of the lower extremity treated by ligature are reported. In three of these gangrene necessitating amputation occurred, but it must be admitted that the cases were not simple ones. An instance of cerebellar abscess following inflammation of the mastoid cells is mentioned, but no reason given for the non-performance of drilling the mastoid process. The patient appears to have been admitted late in the disease.

The *Reports of the Ophthalmic Department*, and of the *Ophthalmic Out-Patient Practice* for 1879 are written by Mr. MACDONALD M'HARDY, and are replete with statistics. To the uninitiated general practitioner it would seem that the ophthalmic department of this hospital should be called the "Iridectomy Department," for certainly this operation is a decided favourite there. The lists, if no mistake is made by the writer in counting, include 85 iridectomies for therapeutic and optical reasons, and 28 in the various cataract operations; making in all 113 iridectomies among 204 patients in the wards. This seems, even to one who has seen a good deal of private and hospital eye work, a large proportion, even if each patient possessed (on admission) two eyes. The importance of this operation should not however be underestimated, for it is certainly a measure of great value; and its use in many affections is undoubtedly imperatively demanded. Might it not have been avoided, however, in some of the cases mentioned as so treated in the Report? They were instances of staphyloma, kerato-conus, corneal ulcer, hypopyon, keratitis, both vascular and interstitial, corneal opacities, kerato-iritis, irido-kerato-cyclitis, iritis, and cataract. Extraction of cataract was frequently done by the downward incision, which is bad surgery, especially if associated with iridectomy, as

it frequently was. The frequency of secondary operations after extraction is unsatisfactory. Pilocarpine, in the local treatment of corneal ulcers, was frequently employed, with, it may be inferred, good results. One case of keratoconus was greatly improved by trephining the cornea. In the out-patient department nothing requiring special notice is recorded.

The *Report of the Orthopædic Department*, by Mr. WARRINGTON HAWARD, contains some interesting facts in regard to the frequency of certain deformities. Sixty-five per cent. of the cases of flat-foot occurred between the ages of 15 and 20 years; sixty-four per cent. of the instances of spontaneous lateral curvature of the spine were between the ages of 15 and 20 years; seventy-four per cent. of the knock-knee cases were in children of between 3 and 5 years, and most of them showed other signs of rickets. There are recorded two cases of osteotomy for knock-knee, in neither of which did constitutional or local disturbance of any importance occur. In a case of antero-posterior curvature of the two tibiæ, perfectly satisfactory results were obtained by removing a wedge of bone.

The *Reports of the Aural and Dental Departments*, by Mr. DALBY and Mr. WINTERBOTTOM respectively, present nothing of great interest. In the latter it is stated that of the 1922 patients treated, ninety-three per cent. underwent extraction; hence nothing very remarkable, in a surgical view, is to be expected. Some cases of alveolar abscess, neuralgia, etc., are recorded. Two instances of hemorrhage, after removal of teeth, are reported as treated by lint steeped in perchloride of iron. How much better, as a rule, is pressure, easily applied by pushing a small cork into the socket, and bandaging the jaws together! Surgeons and dentists are long in learning that pressure is better than all styptics, because more effective and less deceptive.

Under the title of *Clinical Lectures delivered at St. George's Hospital*, Mr. T. HOLMES gives three papers, full of interest and instruction, and written with the greatest surgical acumen. The first is an account of a case of ilio-femoral aneurism, in which the iliac artery was tied with an animal ligature made from the aorta of the ox, after failure of compression, and while gangrene of the leg and foot was in progress. Mr. Holmes is well known as a writer upon aneurism, and displays his erudition in the present article. He thinks the superior safety of compression, in comparison with ligation, has been greatly exaggerated. His remarks on the points of pathology and treatment, suggested by this remarkable case, are worthy of great attention.

The second paper gives the history of an attempt to obtain osseous union of a refractured patella that had previously been united by ligamentous tissue. Incision was made with antiseptic precautions, and sutures introduced through the fragments. The patient nearly died from the suppurative inflammation that occurred; which, in Mr. Holmes's opinion, shows that, even with antiseptics, the operation is attended with too much risk to be generally adopted. Finally, he details a successful subperiosteal resection of the tibia, in which about eight inches of the bone were removed. The ankle-joint was involved in the inflammatory bone disease at the time of operation, but, notwithstanding this complication, the patient did well, and recovered with but an inch and a half shortening. These three elaborate papers are improperly, it is thought, called clinics, because they have apparently been written expressly for publication. Certainly, they are very different from the many clinics heard by the present writer during several visits to London. English clinical lectures on

surgery are far inferior to American clinics, while these papers, or so-called lectures, certainly surpass in diction, analysis, and erudition the surgical clinics of the leading American hospitals.

T. Pickering Pick follows Mr. Holmes's lead by contributing a *Clinical Lecture on the Treatment of Wounds after Amputation during the last Twenty-five Years.* His conversational style is very attractive, and induces one to read every paragraph of his admirable account of the development of the present system of treating amputations with catgut ligatures, drainage-tubes, antiseptics, and wire sutures. The old-fashioned method of dressing such wounds with silk ligatures and sutures, with adhesive strips, and with tight bandages to prevent retraction and to shut in the putrid and irritating discharges, is quite justly accused of being the cause of much surgical fever and pyæmia. He believes in the advance made by Lister's researches, but states that, with all precautions carefully taken, the antiseptic method will at times fail. His results in excision of joints among children have been very different, and highly satisfactory since the adoption of the antiseptic plan of operating and dressing. He makes the following pertinent observations regarding Lister's dressings: "When, for instance, we remove our first dressings at the end of three or four days, we find, it is true, the edges of the wound in apposition, and looking, as we term it, perfectly quiet; but that is all. There is no attempt at union; there is no pouring out of what we used to call plastic lymph; there is no appearance of that little line of redness along the margin of the sore which indicates the inflammation necessary for the healing process; so that in fact, if we were to remove the sutures, the edges would fall apart." This, he says, evinces an absence of vitality and a sluggishness about the wound. He claims, however, that the antiseptic dressing promotes *healthy* suppuration—that is to say, prevents decomposition of pus. The paper is a calm, unbiassed expression of opinion of a thoughtful observer, who does not cling to the traditions of the elders, but thinks for himself.

The next article, *Observations on Certain Eruptions of the Skin which occur after recent Operations and Injuries*, by Edward C. Stirling, is really a monograph on a subject that has received but little attention. It occupies fifty-five pages, and stamps the author as a careful investigator, an earnest worker, and a judicious writer. Medicinal eruptions have recently been carefully studied by Van Harlingen and others; and here is to be found a dissertation on surgical eruptions that forms a good companion to the investigations mentioned. The author first gives the literature and views of many writers who have reported cases of eruption similar to scarlatina occurring after operations. Paget's, Marsh's, and Smith's cases are frequently alluded to, in addition to many others which he himself has collected. He then analyzes a table of cases; discussing the age, mortality, and condition of wounds, in connection with the scarlatinous rash. The eruption he considers analogous to the similar cutaneous symptoms presented at times during the puerperal condition. The only case of the kind recollected by the reviewer is that of a man suffering with compound fracture of the femur, who had a brilliant red eruption during the course of the treatment for the injury. The notes of the case are not at present accessible, but the similarity to scarlatina and the absence of an endemic among the other patients in the ward were at the time subjects of great interest. Mr. Stirling relates a somewhat similar case recorded by Trélat. The paper is too long to have full justice

done it in this short notice, but the author's conclusions are important. He asserts:—

"That the rash and febrile symptoms which occur frequently as the immediate sequel of an operation are often those of scarlet fever; that the fever is, in some way as yet undetermined, dependent on the presence of the wound; and that when scarlet fever occurs under these circumstances, it undergoes certain deviations from the normal type of this disease" (p. 550). He says also that "there is evidence to show that there occurs sometimes after wounds and injuries what may be called a simple surgical erythema, often closely resembling the rash of scarlet fever, but independent of any connection with that disease; and that other eruptions of different type may similarly occur under like circumstances."

The last surgical paper in the volume is that of JOHN H. MORGAN, entitled *Some Remarks on the Diagnosis of Hip-joint Disease.* He calls attention to the wasting of the muscles of the affected limb as a diagnostic feature; and also lays stress on the pain felt when the surgeon attempts to abduct the thigh. This rigidity of the adductors and pectineus is not sufficiently insisted upon by most writers, but is, in our opinion, a very definite and early diagnostic point. The author seems to believe it always present, and states that next to these muscles those flexing the hip are most prone to become rigid. Hence, painful abduction and painful extreme extension are important signs of incipient coxalgia. Persistent elevation and obliquity of the pelvis, when the patient is recumbent, is possibly due, in his opinion, to reflex nerve irritation, causing spasm and rigidity of the iliac portions of the erector spinæ and quadratus lumborum muscles. Some indications for the differential diagnosis between coxalgia, rheumatism, and psoas rigidity, due to caries of the vertebræ, are also given by the author. A number of illustrative histories are added.

On the whole, this volume of Reports is good, because the great excellence of four or five papers atones for much that, in a scientific point of view, is decidedly inferior. Tables of cases are of little value to the profession unless analyzed by the compiler, and yet hospital reports are often filled with them. They add much to the expense of publication, and serve only as padding, unless judiciously discussed by those who had charge of the cases, and who are thus enabled to judge of the relative importance of the facts tabulated. J. B. R.

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ART. XXVI.—*The Bacteria.* By Dr. ANTOINE MAGNIN, Licentiate of Natural Sciences, Chief of the Practical Labours in Natural History to the Faculty of Medicine of Lyons, etc. Translated by GEORGE M. STERNBERG, M.D., Surgeon U. S. Army. 12mo. pp. 227. Boston: Little, Brown & Co., 1880.

IN pursuing his valuable researches under the direction of our National Board of Health, Dr. Sternberg derived, as he tells us, so much assistance from Dr. Magnin's admirable *résumé* of our knowledge in regard to the bacteria, that he was led to translate the entire work, for the benefit of his American co-workers, and also for the much larger number of physicians and scientists, who, without being themselves original investigators, take a profound and constant interest in every fact which contributes to elucidate those great medical and hygienic questions depending upon the germ theory of disease.

In his excellent preface Dr. Sternberg comments upon the mistrust which has been felt by so many cautious observers, in regard to so-called diseases of bacteria, micrococci, etc., in human and animal organisms, and explains it on the ground that results have been so contradictory; eminent men of various countries asserting and denying the very existence of these objects, in the most persistent manner. As he justly remarks:—

"Sometimes we are deceived by giving confidence to a man who has achieved reputation in one line of study, but of his skill and training in the use of the microscope we have no means of judging. Such a man may be a great clinician or a great chemist, and yet be a mere tyro with the microscope: when then we see it announced that Dr. So-and-so failed to discover any *micrococci* in pus, in blood, or what-not, taken from a certain source, we are justified in asking—first, what power did the learned doctor use? second, is he capable of distinguishing micrococci in fluids which contain them beyond all question? or, if he does discover them, we may ask if he is accustomed to making a differential diagnosis between micrococci and inorganic granular material, or unorganized granules of organic origin. This is a decision which the most accomplished microscopist is sometimes unable to make, except by the aid of chemical tests, and culture experiments."

To obviate this want of confidence in results Dr. Sternberg urges the preparation, whenever possible, of photo-micrographs, and rightfully claims for the National Health Board, the credit of first systematically adopting this method, for preserving a constant and unimpeachable record of the objects observed. As specimens of these indisputable proofs, heliotype reproductions of a number of Dr. Sternberg's own photo-micrographs are given in the volume, several of these being of a high order of excellence, and invaluable as illustrations of the descriptions contained in the text.

Our author defines bacteria as the lowest known organisms, situated upon the limit of the animal and vegetable kingdoms, and as being "cells deprived of chlorophyll, of globular, oblong, or cylindrical form, sometimes sinuous and twisted, reproducing themselves exclusively by transverse division, living isolated or in cellular families, and having affinities which approach them to the algæ, and especially to the oscillatoriæ." Bacteria were first discovered by Leuwenhoeck in 1675, and have been variously classified by different authors, but the arrangement of Cohn—into, 1, sphæro-bacteria or globular bacteria (micrococcus); 2, micro-bacteria or rod bacteria; 3, desmo-bacteria or filamentous bacteria; 4, spiro-bacteria or spiral bacteria—is probably the best.

Disputes among naturalists as to whether bacteria belong to the animal or vegetable kingdom, are now abandoned by mutual consent, but have been replaced by discussions as to whether they are to be ranged among the algæ, as contended by Davaine, Rabenhorst, and Cohn, or with the fungi as claimed by Robin and Nägeli. Another much mooted question is in regard to the existence of distinct well-defined species among the bacteria. Cohn dwells upon the impossibility of distinguishing with certainty genera and species among them, although he is convinced that they are divided into species (just as distinctly as the other plants and inferior animals) which our imperfect means of observation render us unable to recognize. Hallier, Billroth, Robin, Nägeli, and others, consider, on the other hand, the different forms of bacteria not as autonomous species, but as phases of development of one or perhaps of several species. Notwithstanding these opinions of the worthless nature of any supposed distinctive characters of bacteria, Dr. Magnin devotes over thirty pages to the classification and description of their genera and species, this por-

tion of the work being profusely and instructively illustrated by plates, selected (apparently) by Dr. Sternberg, and furnished by this gentleman in part from his own photo-micrographs, prepared under the auspices of the National Board of Health.

Part second of this valuable little volume is devoted to the physiology of the bacteria, and comprises sections upon the origin of bacteria, their nutrition and respiration, their reproduction, their rôle in fermentation, putrefaction, virulent affections, etc. Of these divisions, that treating of the connection of bacteria with the contagious diseases has, of course, the greatest interest and importance to the medical profession. Pasteur, according to our author, was the first to affirm the parasitic nature of septicæmia, and his observations were confirmed by those of Coze and Feltz, Davaine, Hallier, and Béchamp. As, however, Zuelzer, Sonnerschein, and Riemschneider, attribute the septic accidents to the effect of an alkaloidal poison, denominated sepsine, and somewhat resembling atropia, whilst they failed to observe any similar results when bacteria alone were injected into animals, Dr. Magnin declares that in the presence of so many divergent opinions, each supported by scientific authorities, he "does not feel justified in adopting any definite conclusion."

In regard to charbon or malignant pustule, our author informs us that Davaine observed the presence of rod bacteria in the blood of patients affected with this disease as early as 1850, but did not attach any importance to the fact, until after Pasteur's observations were published in 1861. The assertion of Cohn that charbon is also the result of a peculiar chemical poison, and not produced by bacteria, is explained by Pasteur, Bert, and Toussaint, by a theory that there are several varieties of malignant pustule, some of them quite independent of the growth of bacillus anthracis.

In like manner variola is attributed to the development of a bacterium (Coze and Feltz) or to a micrococcus (Luginbuhl and Weigert); scarlatina to a micrococcus (Hallier); diphtheria to a bacterium (Tigri, Oertel, Letzerich); typhoid fever to a bacterium; glanders and farcy to a micrococcus; and relapsing fever to the spirochæte Obermeieri (Cohn).

The next section, upon the influence of bacteria upon surgical lesions, with special reference to Lister's antiseptic method, contains much of interest, but Dr. Magnin's final conclusion is, "As to the rôle (of bacteria) in fermentations, in putrefactions, in contagious diseases, and in surgical lesions, notwithstanding the considerable number of labours of which the bacteria have been the object, in these different points of view, it is not yet possible to define it in a certain manner."

A copious bibliography of thirty pages, brought down to date by the translator, adds more to the value of the work, which we must again thank Dr. Sternberg for giving to the medical profession of America. J. G. R.

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ART. XXVII.—*A Manual of Diseases of the Throat and Nose.* By FRANCKE HUNTINGTON BOSWORTH, A.M., M.D., Lecturer on Diseases of the Throat in the Bellevue Hospital Medical College, etc. 8vo. pp. xx., 427. New York: Wm. Wood & Co., 1881.

THIS work, following so quickly upon the group noticed in the last issue of this journal, will be compelled to withstand a much severer test

of criticism than if it had not been so recently preceded by a number of satisfactorily good treatises upon the same subjects. It is abundantly illustrated—too abundantly—to the extent of 175 cuts in the 410 pages of text. The majority of these are sufficiently familiar; having already done service, some of them several times, in works to which the attention of our readers has from time to time been directed. We question the propriety of authors' and publishers' attempts to rival the picture-collections of the instrument-makers: and why the necessity for so many engravings of appliances for the same purpose, when they vary merely by the position of a screw, or some equally unimportant modification? If the practitioner requires a knowledge of all these varieties of tools and appliances, it may be found in the catalogues of the surgical instrument-makers.

To justify our strictures on this point, we may mention that the author depicts no less than three varieties of reflectors attached to head-bands; and one of these is repeated in a picture representing the method of examination. One of the three, the one with the author's own modification, would have sufficed. In like manner, there are no less than six representations of tongue-depressors drawn to various scales. This deference to instrumental illustration will lead to much confusion in some instances in the present volume, when read by persons not familiar with the subject. Thus, an illustration of one laryngoscopic apparatus is overtopped by a reservoir, about which not a word is said in the immediate text, save a line beneath the figure, indicating "Sass's laryngoscope combined with a receiver for compressed air." The uninstructed reader would naturally suppose that this reservoir had something to do with the illumination, while it is really for the purpose of driving sprays, and has no direct connection with laryngoscopy. Again, the figure which, on one page, is made to do duty for Elsberg's nasal speculum, on another represents La Borde's tracheal dilator. In one of the borrowed cuts, representing the laryngoscopic mirror held in the left hand of the observer, and accredited to its original source, the assumption is made that the plate had been inadvertently reversed by the engraver, while in fact the picture was purposely designed to show the mirror held in that hand. Curiously too, although the author states that in looking through the head mirror the right eye only should be used, his illustrations, even that intended to show the use of his own instrument by himself, exhibit the left eye in position. Practically it is a matter of indifference which eye or which hand is used; the guide being habit or convenience of manipulation. The author criticizes the usual instruction given in exposing the larynx to laryngoscopic inspection. Thus, instead of directing the patient to endeavour to make the long sound of *ā* (as in *fate*), which really becomes *eh* (or *e*, as in *met*) in the process, owing to the physical laws governing the enunciation of vowel-sounds, he would have the patient pronounce the sound *ah*. In his own language, "in this manner the laryngeal cavity is brought thoroughly into view." If the reviewer should record his own experience, he would say that "in this manner the laryngeal cavity is completely hidden by the epiglottis," in the vast majority of instances.

These remarks are made because it is the duty of a teacher in a great medical school to be exceedingly accurate in his public instruction; and when this instruction is conveyed in the form of a systematic treatise there is always time to correct the text. We must take exception to the too-frequent advice, repeated in this volume likewise, to test the warmth of the laryngoscopic mirror upon the cheek. An unfortunate scratch on the face might be the inlet of syphilitic infection.

As to the subject-matter of Dr. Bosworth's manual, it embodies the results of the observation "of something over eight thousand cases;" in making which public he has endeavoured to confine himself to his own personal experience. The results from this experience, as would naturally be supposed, do not differ materially from what has already been recorded by others, sometimes in very similar expressions; but there are a few peculiarities which it will be of some moment to notice further on.

The sections on Anatomy, Etiology, and Pathology are concise, and, as as a rule, accurate and instructive, and are accompanied with a series of well-selected illustrations.

We can hardly credit the amplified signification which the author has given to a term which, in our opinion, should be discarded as altogether indeterminate. We allude to *fauces*, which the author adopts "to describe the back part of the mouth and lower pharynx," including "the soft palate, uvula, pillars of the fauces, tonsils, and that portion of the pharynx which is visible by direct inspection." This is the most extensive definition of the term that we remember to have read. Consequently the section on "Diseases of the Fauces" contains chapters on Catarrhal Affections of the Pharynx; Croupous Exudative Affections of the Pharynx; Acute Affections of the Tonsils; Hypertrophy of the Tonsils; Systemic Diseases of the Pharynx; and Neuroses of the Pharynx.

The chapter on the Use of Instruments contains all that is essential to convey a correct idea of the manner of applying local treatment to the upper air-passages. We must take exception to the strong indorsement of the use of the air-condenser to drive sprays under great pressure. Our own experience is that, as a rule, a pressure of from two to five pounds is sufficient for all that is to be expected from this method of treatment. The author speaks of using a pressure "as high as fifty pounds." Over and again the writer has found a pressure of fifteen pounds, employed for cleaning purposes only, productive of hemorrhage when propelling spray against diseased mucous membrane, especially that of the nasal passages, where this excessive pressure is particularly recommended by the author. We cannot but suspect that the sprays are frequently used in cases in which skilful actual manipulations with the brush or sponge in the interior of the laryngeal and nasal passages must be fully as safe and far better.

In the treatment of chronic catarrhal pharyngitis, we observe that the author is accustomed to destroy the large bloodvessels with a small actual cautery, a procedure far preferable, in his experience, to any other.

In the treatment of pharyngitis sicca, we notice a high encomium is conferred upon the local use of sanguinaria and galanga in powder. Belladonna, too, is recommended in the same manner, one part to seven of lycopodium; a remedy which, theoretically, would only increase the dryness which it is intended to counteract. In excising an elongated uvula, an ordinary pair of scissors is recommended; and it is intimated that complete removal of the uvula may impair its function of completing the closure of the opening between the pharynx and the nose; thus permitting the escape of food into the nasal cavity. This is an observation with which we have not met before.

Acute follicular pharyngitis, and chronic follicular pharyngitis are included, with membranous sore-throat or croupous pharyngitis, in croupous, or exudative affections of the pharynx. Chronic inflammation of the pharynx is said to result "in the development of small masses of glandular tissue in a state of hypertrophy, this hypertrophy consisting of connec-

tive tissue, and large bloodvessels, and epithelial elements, together with retained secretions which have undergone degeneration;" but it is not intimated whether this observation is simply based upon theoretic induction, or is the result of actual examination of the histological elements of the enlarged nodules. In the further description of this disease, allusion is made to a certain amount of neuralgic pain, referable to the throat and neck, which is ascribed to involvement of the terminal filaments of the nerves. The involvement of the lymphatic glands of the neck, which is attributed by the author to direct connection between the closed follicles of the pharynx and the cervical ganglia, is, we believe, confined to cases associated with diseased nasal mucous membrane, with which the cervical glands are in direct anatomical, lymphatic communication. In the treatment of this and similar affections, characterized by accumulations of mucus on the diseased membrane, stress is justly placed upon the necessity of thorough cleansing before applying local medication; and the best method is stated to be the use of sprays propelled from a compressed-air apparatus, with a pressure of from fifteen to eighteen pounds. We believe that more is accomplished by this process than the mere cleansing; that the impact of the finely-divided spray upon extended surfaces stimulates both the absorbent and the nutritive vessels, and is thus a direct element of cure. In accordance with the majority of observers, the author believes that when the nodules are old, the only method of relief is in their complete destruction, for which purpose he uses a series of iron wires heated to redness. A very good illustration of a series of wires for this purpose, of the author's own construction, accompanies the text. The section on hypertrophy of the tonsils, again reminds us of the instrument-maker's catalogue, no less than six forms of tonsillotome being represented. The author believes in removing the entire organ whenever possible; asserting that, practically, the tonsil does not exist in health, and that, therefore, it is a mistaken idea to allow a part of the organ to remain, to fulfil any function that it possesses in the economy.

Strumous ulceration of the pharynx is described as entirely distinct from congenital syphilis, an opinion founded on failure in ameliorating the condition by anti-syphilitics. Still, the author considers it justifiable to administer anti-syphilitic remedies, but urges that they be given in connection with cod-liver oil, iodide of iron, and the like. He speaks highly of the frequent application of iodoform, combined with tannin and morphia, and repeated two or three times a week.

Distinct place is given to tuberculosis of the pharynx, as illustrated in the details of a case under the author's observation. In this connection an attempt is made to express, in tabular form, the characteristics which distinguish the ulcerative process in the pharynx, in syphilis, in phthisis, and in scrofula, respectively. In the treatment of this affection, insufflations of iodoform, with starch and morphia, are said to be quite efficacious in controlling the ulcerative action, and relieving the pain and cough. Herpes of the pharynx is described as a neurosis.

In the treatment of affections of the nasal passages, we find that Dr. Bosworth is a strong advocate for the use of the galvano-cautery in destroying hypertrophied tissue.

The sections on diseases of the larynx are quite full. Superficial acute laryngitis, its most frequent form, is described as subacute laryngitis.

Laryngeal phthisis forms one of the author's strongest, shortest, and best written chapters. He defines the disease as a chronic ulcerative pro-

cess, under the influence of some marked, general, and non-specific dyscrasia; thus dissenting from the prevalent view that it is dependent upon the specific influence of tuberculosis. It is apparent that under the head of laryngeal phthisis, our author includes those cases of ulcerative catarrhal laryngitis which are associated with broken-down conditions of the system from various causes; a connection in which the adoption of the term *phthisis* is of questionable propriety, as that term is almost universally employed as indicative of pulmonary lesion, whatever may be the form of the wasting-away, the consumption, the phthisis. The characteristic appearances described and illustrated are certainly those of disease associated with pulmonary lesion. These latter cases are rarely curable; some observers doubting their curability altogether. Dr. Bosworth says: "In the earlier stages the disease is curable, in probably the majority of cases; and even after the occurrence of extensive ulceration and destruction of tissue, I have seen cases recover." Certainly this must refer to ulcerative catarrhal laryngitis only, for the observations of all other authors have led to a far different opinion.

Dr. Bosworth's treatment consists of four steps, which he regards as important: first, thorough cleaning; second, local applications of mild astringents, alteratives, or resolvents; third, application of an anodyne; and fourth, the application of iodoform as a specific, at first daily, or every other day, and later, once a week or a fortnight. In summing up certain conclusions which he considers well grounded, he suggests that "tracheotomy is justifiable, as a remedial measure, when local remedies fail to relieve, and before it is demanded by dyspnœa from inflammatory stenosis."

The chapter on Stenosis of the Larynx is likewise good, short, and admirably illustrated. Neuroses of the larynx is the most extensive section in the book, and presents an excellent *resumé* of the subject. Bilateral paralysis of the abductors, quite a rare lesion, is illustrated by a record of thirty cases, original and selected, indicating its various modes of origin. The chapter on Tumours of the Larynx is less imposing than contemporary authors have made it, being concise, comprehensive, and judicious. The chapter on Artificial Openings into the Air-passages, on the contrary, is more extended, and introduces illustrations of two classes of instruments, which experience has proved to be both hazardous and dangerous. We allude to bivalve tracheal canulas, and tracheotomes. The final chapter, on Extirpation of the Larynx, gives brief records of twenty-three collected cases. Of these sixteen were performed for carcinoma, but one appearing to have been really successful. Of five cases for sarcoma, one was successful, as was one for granuloma, while in one case, performed for perichondritis and necrosis, the patient succumbed as the result of the operation. The voice-tubes of Gussenbauer and Foulis are well illustrated; but the description of the operation itself is too meagre for utilization, while lack of reference to their original sources renders the records of the cases unavailable for details of the operative procedure. An appendix of formulæ, referred to in the volume, concludes the text, which is, however, interspersed with many formulæ. An excellent index furnishes sufficient reference to the subject-matter.

While we cannot but consider this manual deficient in many respects as a systematic work upon diseases of the throat and nose, it is to be commended as an exhibit of an unusual familiarity with the affections of which it treats; and it contains many practical observations of great value, even to the experienced specialist. J. S. C.

ART. XXVIII.—*Transactions of State Medical Societies.*

1. *Transactions of the State Medical Society of Arkansas at its Fifth Annual Session.* 8vo. pp. 120. Little Rock, 1880.
2. *Transactions of the Medical Association of Georgia.* Augusta, April 21, 22, 23, 1880. 8vo. pp. 251. Atlanta, 1880.
3. *Proceedings of the Louisiana State Medical Association.* New Orleans, March 31, April 1 and 2, 1880. 8vo. pp. 111. New Orleans, 1880.
4. *Transactions of the Mississippi State Medical Association,* Vicksburg, April 7, 8, and 9, 1880. 8vo. pp. 177. Jackson, 1880.
5. *Transactions of the New Hampshire Medical Society.* Concord, June, 1880. 8vo. pp. 143. Concord, 1880.
6. *Transactions of the South Carolina Medical Association.* Columbia, April 20 and 21, 1880. 8vo. pp. xlviii. 57. Charleston, 1880.
7. *Transactions of the Medical Society of Virginia.* Danville, October 19–21, 1880. 8vo. pp. 262. Richmond, 1880.
8. *Transactions of the State Medical Society of Wisconsin for the Year* 1880. Vol. xiv., pp. 207. Milwaukee, 1880.

1. The fifth annual session of the *Arkansas* Society was held at Little Rock, and in the opening address of welcome by Dr. A. L. Breysacher. Among the many gratifying signs of increasing importance and growth in the material prosperity of Little Rock, are quoted the establishment of a medical school, and a medical journal, the *Arkansas Medical Monthly*, both of which received the endorsement of the Association.

Dr. E. T. DALE, President of the Society, selected for his annual *address* the claims for recognition of medicine upon the government for encouragement and protection, and its dependence upon the intelligence of the community for its progress and perpetuity. In order to secure such recognition and appreciation it was urged that the profession should take a more active part in public affairs, and should be more interested in public legislation, as it is the duty of physicians, as citizens, to see that the interests of State Medicine are properly cared for.

At the last meeting of this Society a State Board of Health was constituted which subsequently received recognition and substantial aid from the National Board of Health; and at this session a *Report on State Medicine* by Dr. D. A. LINTHICUM, from the Committee on State Medicine, makes a very satisfactory report of the work of this Commission, and also upon the progress of sanitary science, with a statement of some of its requirements as applied to the community, showing a just recognition of the claims of preventive medicine.

Dr. J. B. CUMMINGS contributed a short *Account of the Yellow Fever as it appeared in Forrest City, Arkansas, during the Summer of* 1879, in which a history of the epidemic is concisely stated, including a graphic clinical history of the disease, as well as some general remarks upon treatment. Although not contagious in its personal sense, the disease is eminently infectious under proper favourable conditions, and in the opinion of the reporter "the strict quarantine established by the aid of the National Board of Health was of incalculable benefit in preventing the spread of the disease;" and he strongly commends the plan of quarantining an infected district rather than the rest of the country.

In an article upon *Expert Testimony without Compensation*, Dr. J. H. SOUTHALL refers to a case in which Dr. Breysacher and himself had been summoned by the defence to testify as experts without proper remuneration, in a case of whose facts they had no knowledge, in which they succeeded finally in obtaining a decision from Judge Jacoway, holding that "they could not be compelled to testify as experts unless paid as such." As there had, heretofore, been no decision nor precedent concerning expert testimony in the State, this case becomes of importance to physicians practising in Arkansas.

*A Case of Impassable Urethral Stricture relieved by External Perineal Urethrotomy* is reported by E. R. DUVAL, M.D.; one of *Fracture of the Coronoid Process of the Ulna* by J. E. BENNETT, M.D.; *Diabetes Mellitus*, by A. DUNLAP, M.D.; and one of *Septicæmic Poisoning and Mercurial Eczema caused by wearing vulcanite plates* for an artificial denture, by THOS. W. HURLEY, M.D. The case of diabetes occurred in a boy of eleven years and was well marked, it was treated with excellent results at first with calcium sulphide and iron, subsequently with sodium salicylate. Treatment lasted four months, during which period the diet was restricted. The amount of urine at the conclusion had fallen to the normal and did not contain an appreciable amount of sugar.

Interesting papers were also read on *Malarial Hæmaturia* by G. B. MALONE, M.D.; *Some Points in the Treatment of Pneumonia* by J. B. SHIBLEY, M.D.; and on *Scarlatina and its Analogues, Diphtheria, and Membranous Croup*, by C. E. NASH, M.D., which were carefully prepared, and the two latter especially are of considerable scientific value as bearing particularly upon rational treatment.

2. THE *Georgia* volume of Transactions contains a number of interesting practical papers that will repay perusal.

Dr. ROBERT BATTEY, under the title of *Scrofulous Diseases of the Joints Complicating Phthisis*, reports a case of a young man of 20 years, who suffered for nearly a year with suppurative inflammation of his left knee, and who presented the physical signs of consolidation of the left lung in the upper part of which a large cavity existed. Amputation was thought advisable, but was delayed by advice of a consultant on account of the advanced lung disease. Finally, the patient called for amputation of the thigh to release him from the intolerable suffering from which opiates had ceased to yield him relief. His condition was very unpromising, but the operation was performed in order to grant him euthanasia. Much to the surprise of his attendants, he made a rapid recovery; the appetite and powers of assimilation returned; his spirits improved, he slept without opiates; and in one month was out of doors on crutches. A year afterwards he had grown fat, had lost his cough, and was apparently fully restored to health, so that he was enabled to engage in business. After enjoying excellent health and leading an active out-door life for over three years after the operation, one day he had an accidental fit of coughing while eating, which resulted in a fatal hemorrhage of the lungs.

This case suggests discussion of the question, What is to be done with a scrofulous joint in consumptive subjects? Dr. Battey concludes that if there is a prospect of prompt healing of the stump amputation is the appropriate remedy. If this cannot be hoped for, the only recourse is palliation by evacuating pus, extending and immobilizing the joint, and applying antiseptic dressings.

The consideration of this and other cases reported may perhaps elucidate an obscure point in the pathology of phthisis. It is evident in many of these cases that the fault lies to a great extent in the insufficiency of the powers of nutrition; primary and secondary assimilation being below par, and insufficient for the wants of the system, denutrition and wasting necessarily result. The question arises, If the ordinary means are insufficient to bring up the powers of assimilation to meet the demands of the body, would not reducing these exactions by a definite amount make the two factors more nearly correspond? The common observation that after recovery from amputation of a large member, the patient ordinarily develops fat, would certainly favour the affirmative view; and strong support of it is also apparently furnished by cases like those of Dr. Battey, even though it be admitted that the joint disease may have preceded the pulmonary deposit. This consideration will probably never lead any surgeon to amputate a limb in order to cure phthisis; but, where a diseased joint brings up the question of operation, a certain amount of pulmonary disease would, if this view is correct, not merely be regarded as not a contra-indication, but indeed as an additional reason for performing the operation; for without it an unfavourable termination of the case may be regarded as almost inevitable.

The same surgeon also reports a case of *Ligation of the Common Carotid Artery* in a man, for the relief of repeated hemorrhages following a deeply incised wound near the angle of the jaw in the subparotid space. Tendency to syncope following the loss of blood, and the tying of the artery, was noticed for several days. Facial paralysis also appeared but afterwards gradually subsided, and his health was subsequently entirely restored.

In *A Report of Forty-Two Cases of Uncomplicated Stricture of the Urethra*, Dr. Wm. S. Armstrong gives a *resumé* of cases treated in his own practice during the year, and strongly advocates gradual dilatation in preference to urethrotomy or divulsion in uncomplicated strictures, on account of the acknowledged greater safety and convenience to the patient. Only two contingencies in uncomplicated strictures, in the mind of the author, would justify these operations, viz.: the resilient in the curved, and the irritable, and often resilient, stricture in the pendulous urethra. In dilating very narrow strictures, it is recommended to pass a filiform whalebone bougie and tie it in the urethra overnight; in the morning one or two others may be passed by its side. This expedient will often enable the surgeon to overcome spasm in a tight stricture, before inserting a steel bougie. Of the forty-two strictures cured by dilatation, one patient had a rigor with fever lasting a few hours, and another had a slight swelling of one testicle twice. In every case the necessity for the systematic use of the sound was impressed upon the patient in order to secure permanency in the cure.

The same writer contributes the notes of *two cases of aneurism*: first, a traumatic femoral following contusion with subsequent rupture and death, operation refused. The second, a popliteal, caused by ligation of the femoral. He also reports a case of compound *fracture of the skull*, with hemiplegia, followed by recovery, in a girl five years of age.

*The Ophthalmic use of Quinine and its Therapeutic Action* is the combined subject discussed by Dr. A. Sibley Campbell, of Augusta, in connection with some ophthalmic operations and remarks on after-treatment. In a case of cataract extraction (man, 45 years) a perfect result ($V = \frac{20}{20}$ with a cataract glass) was obtained by a modified Graefe opera-

tion. A weak solution of ergot was used topically after the operation for the purpose of relieving conjunctival hyperæmia, and quinia was administered, fifteen grains a day at first, afterwards gradually withdrawn. In subsequently discussing the action of quinia upon the organism, he reaffirms the views of Dr. Robert Campbell published in 1858, that quinia primarily influences the circulation by causing contraction of the middle coat of the arteries, giving tone to vascular tissue, and preventing and dispersing engorgements, whether in the nerve centres or elsewhere; that it does not exert any influence directly upon the nerve structures themselves. This renders the agent of especial utility in all congestive disorders, and warrants its use after all surgical operations, including those upon the eye. Instillations of atropia, and topical applications of ergot (fl. ext. f℥j, water f℥vij), are also useful in reducing conjunctival irritation, and hyperæmia.

Dr. P. L. HILSMAN, of Albany, reported a *Case of Double Ovariotomy with Antiseptic Precautions*, death occurring on the nineteenth day from tetanus. The abdominal viscera were found in excellent condition at the autopsy; the pedicles, having been tied with silk ligature and cut short, were found encysted in an organized mass; not the least evidence of inflammation existed. The case, at first, did well after the operation, the temperature not going above 100°, but exposure to cold by an open window brought on the fatal attack of tetanus. The tumour had been growing for several years, and had been tapped several times. On one of these occasions, the patient was found to be pregnant, but she went on to full term, the growth of the tumour being much retarded. The operator attributes this influence upon development to the pressure of the gravid uterus, and recommends trials of systematic pressure in such growths. We cannot help calling attention in this connection to the remarkable results reported by Dr. Addinell Hewson from the treatment of uterine fibroids and fibrocystic growths by applications of earth, at the last meeting of the American Medical Association.

*Some Disorders of the Genito-Urinary Organs, often Mis-named Spermatorrhœa*, is the title of an interesting paper by Dr. JNO. THAD. JOHNSON of Atlanta, in which he calls attention to the great rarity of true spermatorrhœa; and the means of recognizing and treating hyperæsthesia of the neck of the bladder, stricture of membranous urethra, prostatitis, and vesical catarrh which are most frequently confounded with the disease in question.

Dr. CHAS. W. HICKMAN of Augusta read an essay upon *Amblyopic Affections, their Value in General Practice*, in which the status of amaurosis and amblyopia is defined and their relation to tobacco-poisoning, uræmia, optic neuritis following traumatism or exhausting diseases pointed out.

Dr. J. MCINTOSH, of Thomasville, presented a *Report of Seventeen Cataract Operations with Remarks;* in all but four, good vision was obtained. He gives the preference to Beer's knife, the corneal incision, with iridectomy, and incision of the capsule at its periphery; using atropia instillations daily after the operation.

Dr. G. F. WIRSEN, under the title of *Report of the Section on Gynæcology for the Ninth Congressional District*, communicates a single case of dystocia from deformed pelvis (2½ inches transversely at the outlet) where after delivery by the forceps of a still-born child at full term, the patient was permitted to again proceed to full term without interference

although under the reporter's care from the seventh month. It appears from the report that after labour had set in on the second occasion the vigorous efforts of the uterus were supplemented "by two or three doses of the fluid extract of ergot," finally, by the aid of a lever made from an old spoon, in about three hours a living child was born, the forceps not having been applied for fear of destroying the child! The mother died—not, as might have been anticipated, from rupture of the uterus—but of exhaustion after several severe hemorrhages. There was no autopsy reported, and no information as to whether the hemorrhage was caused by a laceration of the cervix or not.

3. The first paper in the *Louisiana* Proceedings is the address by the President. Dr. J. W. Dupree considered the advantages arising from medical organization, and urges the importance of knowledge of public and personal hygiene. The annual oration was delivered by the Rev. Dr. Hugh Miller Thompson, who dwelt particularly upon the value of high personal character in the physician as the basis of true success.

The Standing Committee on State Medicine reported, through Dr. S. E. Chaillé, several new provisions in the interests of State Medicine proposed for the Constitution of Louisiana; amongst others to re-organize and render more efficient the State Board of Health.

Dr. T. G. Richardson presented a report on *Hydrophobia*, based upon 53 cases collected by him by correspondence with physicians in the State, both city and country. More than half the patients were bitten during the hot season, white and black were affected in about the proper numerical proportion, in every case the disease was traced to dog-bites, the animals being usually of the smaller and more common varieties. The average incubation was about six to eight weeks, shortest four days, the duration of disease from one day to two weeks. In 45 cases no application, whatever, had been made to the wound with a view to cauterization; in one the wound had been excised and cauterized, in others nitrate of silver or ammonia had been used. In not a single case was nitric acid, the alkaline caustics, or the hot iron employed. In two the hair of the dog had been applied. Special medication was mentioned in 28 of the cases, three-fourths of which number took opium, chloroform, chloral, or bromide of potassium, in others atropia, and woorara were also used, without any benefit. In another series including twenty cases where persons had been bitten by rabid animals free cauterization by nitrate of silver (11), hot iron (1), hot iron and carbolic acid (1), iodine (3), and in four where the wound was excised as well as cauterized, all the patients escaped. This interesting report also contains a statement of the clinical points of the cases mentioned in tabular form.

Dr. R. H. Day communicates a case of *incised wound of the abdomen* with protrusion of intestines. The parts presenting were washed and returned, the wound closed with sutures, a compress wet with whiskey applied, and by laudanum given by the mouth he obtained perfect quietude of the patient. The compress was removed on the sixth day and parts were found united by first intention. The patient completely recovered, in spite of the fact that the original injury (stab with a penknife) had made a gash two inches long in the greater curvature of the stomach, which was returned into the abdominal cavity without ligaturing, trusting to the roller and compress to maintain coaptation.

Dr. A. W. De Roaldes advocates the use of *Cold Douche in Algid and Choleriform Pernicious Fever*, being guided by the clinical thermometer.

Dr. M. SCHUPPERT presented a review of the Discussion on *Morbus Coxarius* at the International Medical Congress in Philadelphia, in 1876, in which some of the assertions made at that memorable meeting are criticized and apparently not without justice; those who are especially interested in the views there enunciated will peruse with interest this very readable critique.

4. The thirteenth annual meeting of the *Mississippi* Association was held at Vicksburg. The President, Dr. E. P. SALE, selected for his topic *The Duties we owe Our Women*, and discussed some hygienic and physiological questions, whose influence upon the health of mothers, and indirectly upon the future development of the race render them of paramount importance.

Reports of recent advances in surgery and obstetrics, and a short notice of new remedies appear. Dr. PHARES recommends *Ascyrum Crux-Andreæ for Pertussis*, a variety of St. John'swort, first used by physicians during the exigencies of the war, which caused many experiments to be made with indigenous plants. After using it tentatively at first, he found that it gave great relief in whooping-cough, and he subsequently had employed it in many cases, he had not heard of a single fatal case; it appears to cut off the morbid process in a few days. A strong recent infusion of the leaves and tops was employed.

Two papers on Hæmorrhagic Malarial Fever are contributed, the first by Dr. J. M. GREEN, under the title of *Malarial Hæmaturia*, and the other by Dr. B. F. KITTRELL, being the report of a case of *Hæmorrhagic Malarial Fever;* both being valuable clinical contributions to this interesting topic.

Dr. C. A. RICE read a short paper on the *Treatment of Wounds*, in which he expresses the opinion that in incised wounds the carbolic acid spray may prevent primary union; recommending in preference accurate coaptation and hermetically sealing. In penetrating wounds, on the other hand, this method is not recommended, but the wound should be allowed to remain open for drainage.

A number of reports of clinical cases of more or less interest conclude this interesting and well-printed volume; we notice, however, an unusual number of typographical errors, which indicate want of careful revision by the Publication Committee.

5. The present volume of the *New Hampshire* Transactions contains beside the annual address of the President four essays which are all interesting; we incline to the opinion, however, from the internal evidence that the chief motive of the meeting was æsthetic and social rather than severely scientific. The President, Dr. THOMAS W. PRAY, of Dover, selected for his theme the *Etiology, or Nature, Causes, etc., of Diphtheria*, and under the latter part of his title includes the historical *résumé*, pathological anatomy, clinical history, differential diagnosis with croup, and the treatment both prophylactic and clinical. In regard to etiology, diphtheria is looked upon as being due to a special poison, which is communicable, and associated with the development of micrococci in the body with the proviso that the latter may be the attendants and not the specific cause. Tender age, atmospherical influences and filth are all predisposing causes. The author recommends that the word croup be reserved as the name of

a symptom, and that laryngeal diphtheria be substituted where there is a false membrane and evidence of constitutional disease.

Dr. WILLIAM THAYER SMITH discusses the phenomena of *Suspended Animation*, and sums up his conclusions as follows :—

1. "That in the higher animals absolute suspension of all the vital functions never takes place except in death. In sleep, hibernation, catalepsy, and narcotism, which are the nearest approach to suspended animation, vital action may always be detected.

2. "That the question whether in any organism, vegetable or animal, life ever continues when its functions are absolutely suspended, is not settled. But some facts seem to indicate that there may be latent life without functional activity."

D. F. A. STILLINGS contributes an article on *Melancholia and its Connection with Ancient and Modern Suicides*, whose scope is well set forth in the title. The condition of melancholia should always be considered as suicidal, and appropriate moral treatment adopted. In ministering to the mind diseased the attention is primarily directed to the bowels, as inactivity of the intestines is very frequently a prominent feature. Tonics and persistent feeding with nourishing food, aided by cod-liver oil, and strychnia, phosphorus, and bark, are most efficient.

Two unusual surgical operations, *Ligation of the Common Carotid*, and *Exsection of the Inferior Dental Nerve*, are reported by Prof. L. B. HOW, with success in each case. The ligation was performed for the relief of hemorrhage following subcutaneous rupture of a large cirsoid aneurism of the temporal region and forehead. Why the main trunk was tied in preference to the external branch is not stated.

6. The Presidential address before the *South Carolina* Association by Dr. F. M. ROBERTSON is a scholarly and temperate consideration of some of the fundamental assumptions involved in the hypothesis of evolution, and their failure to meet the requirements of science indicated, whether it concerns the nebular hypothesis, abiogenesis, and not a few of the various forms of fallacy that have been enunciated in connection with protoplasm. Darwin's "Descent of Man," in the second volume, contains a postscript stating that some of his former statements had been based upon an error, and in another place states "A brief summary will be sufficient to recall to the reader's mind the more salient points in this work. Many of the views which have been advanced are highly speculative and some no doubt will prove erroneous." The essayist adds, "These admissions are sufficient in themselves to discredit Mr. Darwin's hypothesis, and place his 'Descent of Man' beyond the pale of scientific productions."

Three cases of *Epileptiform Convulsions Successfully Treated by Hypodermic Injections of Sulphate of Atropia* are communicated by THOMAS LEGARE, M.D. The cases were all acute, one following injury of supra-orbital nerve, the others associated with menstrual disorder. The rather large dose administered was (gr. $\frac{1}{74}$) repeated morning and evening, and continued from ten days to two weeks.

Interesting cases of analysis in *arsenical poisoning* (following the method of Otto) and in *morphia poisoning*, were communicated by Dr. C. U. SHEPPARD, the analyses having been made by H. D. GEDDINGS, a medical student, who also contributed a good *Analysis of a Biliary Calculus*.

Reports of Executive Committee of Board of Health and from the State Board of Health are also included in this interesting volume of transactions.

7. In the *Virginia* Transactions two addresses and four volunteer papers appear, together with some discussions upon impromptu topics and a report on medical progress.

Dr. HENRY LATHAM, in his presidential address, considers some topics of more than local interest. The relationship of medical organization and medical progress was first taken up, from whence he naturally passed to the need of establishing a fully equipped Board of Health. Although permission had been granted by the Legislature to establish such a board, it was practically annulled by the condition that the State should be put to no expense in its support! Which would intimate that the representatives of the people did not know anything about sanitary science, and cared still less. Evidence of the want of appreciation of the services of medical men in Virginia is also shown by Dr. Latham, by quotations from the law permitting a court to engage a physician to attend prisoners in its jail, and for this service "to make him a reasonable allowance not exceeding seventy-five cents a day for each day he attends a patient." Twenty-five dollars is the extreme compensation to any physician or analytical chemist "for making an analysis to discover poison in any criminal case." In commenting upon the debased legal status of medical practitioners as compared with that of lawyers, the author says:—

"I am personally aware of a case in which a law fee of $5000 was awarded a lawyer for writing a will. A fee of this magnitude would not have been allowed for medical attendance upon the lawyer's family for a full quarter of a century, yet the court thought it a reasonable charge. But the Legislature made up mostly of lawyers thinks seventy-five cents a day for a visit to prisons, and twenty-five dollars for a chemical analysis for suspected poison requiring days and perhaps weeks of labour, a very liberal fee for one of the disciples of Æsculapius."

In order that physicians as a class may make a better figure on the witness stand, the medical colleges are called upon to teach medical jurisprudence instead of allowing it as at present to remain an empty title in the annual announcement; on the part of the profession, it is recommended to make this department a serious specialty. After enumerating some other grievances of physicians in Virginia, Dr. Latham, in turn, congratulated the society upon the fact that the two medical schools in Virginia had adopted a compulsory three years' course prior to graduation.

*The Status of the Medical Profession of Virginia* is also considered in a volunteer paper presented by Dr. THOS. J. RIDDELL. It certainly cannot be very high, judged from its legal standing at least, any one being allowed to practise medicine by paying a license-fee of ten dollars; "nevertheless, the law requires a barkeeper to establish a good character before he can obtain license," to pursue his business. Certainly it is full time that doctors in the Old Dominion paid some attention to politics.

In a *Report on Advances in Practice of Medicine*, Dr. G. WM. SEMPLE, in referring to the treatment of hepatic abscess by aspiration, spoke of his own case, in which after two years of suffering and ill-health a hepatic abscess had opened spontaneously into the colon; he believed that his long illness might have been saved by timely aspiration as recommended by Hammond. Among new remedies, he mentions the hypodermic injection of the salts of quinia, particularly the hydrobromate of quinia in the treatment of intermittents. Less of the agent is required when given in this way, and it acts with equal certainty and more promptness in aborting chills. In using morphia and atropia hypodermically, the reporter administers by the mouth hydrobromic acid with much success, to avert the

distressing nausea and vomiting, which occurs in some patients. This idiosyncrasy he explains on the supposition that morphia may be converted into *apomorphia* in the blood of these cases. He also suggests the employment of the hydrobromate in preference to the sulphate of morphia. In *hemorrhagic malarial fever* he used atropia (gr. $\frac{1}{100}$ to $\frac{1}{75}$) hypodermically, every eight or twelve hours according to the severity of the case. Gelsemium, given in full doses (gtt. xx–xl of the fluid extract) in *neuralgia* and *muscular rheumatism* was used with excellent results, repeated every two or four hours until physiological effects begin to appear. A case of great prostration, collapse, and pains in the back and extremities following a *spider bite*, was completely relieved by intra-venous injection of aqua ammoniæ (♏xv) within a few minutes.

*The Practical Bearing of Recent Advances in Cerebral Localization and Cerebral Thermometry*, especially as regards the diagnosis of cortical injuries and the application of the trephine, was presented in an interesting communication by Wm. C. Dabney, M.D., illustrated by several diagrams, containing a summary of the present state of our knowledge of this subject, more especially following the monograph of Lucas-Championnière on "La Trepanation Guidée par les Localisations Cérébrales." Over a superficial collection of pus it is almost certain that there would be an elevation of surface temperature.

In a volunteer paper entitled *Some Remarks about a Common Functional Eye Trouble*, Dr. Jos. A. White communicates some very practical and interesting facts in regard to asthenopia and its causes.

In a general discussion upon *Summer Complaint of Infants*, the character of cholera infantum as a distinct disorder, connected with high temperature, was generally agreed upon; in the treatment calomel or bismuth in considerable doses were equally endorsed; mild counter-irritation to the spine and abdomen were also recommended, with a diet consisting only of milk and lime-water (condensed milk preferred by some) or chicken-tea, but above all the importance of a change of air to the mountains or seashore was insisted upon. Subsequently tonics and mild astringents might be needed as sometimes in true cholera.

In a volunteer paper on *New Remedies* Dr. Chas. R. Cullen discusses the value of Viburnum prunifolium in uterine hemorrhage and threatened abortion, Cascura sagrado in constipation, Berberis aquifolium in syphilis and scaly disorders of the skin, and Cereus Bonplandii in cardiac embarrassment and dyspnœa.

8. *Honour to Medical Men* was the title of the presidential address before the *Wisconsin* Society, delivered by Dr. John G. Meachem, Sr., of Racine, in which he dilated upon the devotion and self-sacrificing character of physicians' labours, which appear most conspicuously in times of public peril during the prevalence of an epidemic.

Dr. S. Marks contributed some *Suggestions in Antiseptic Surgery*, more particularly in the details of its application to major amputations.

Dr. N. Senn read a contribution to our knowledge of *Fracture of the Rim of the Acetabulum* based on the reports of twenty-seven cases, with experiments upon the cadaver, in which the anatomy of the articulation and the pathology of this rare form of injury are briefly considered. In treatment, a fixed dressing after reduction is recommended, or if not enough of the rim of the acetabulum is left to prevent reluxation by muscular contraction, permanent extension and fixation are necessary. Some experi-

ments upon the cadaver led to the conclusion that fractures through the floor of the acetabulum are more apt to occur than simple fractures of the rim, they require a less degree of violence to produce them, and their greater mortality is attributable to co-existing visceral lesions rather than to the increased amount of bone injury.

A case of *Fracture of the Superior Maxilla*, in which an interdental splint of hard rubber was successfully used, was reported by Dr. J. F. PRITCHARD, and the details of application explained. The case was one of compound fracture caused by the crush of a horse's foot; healing was completed in about four weeks.

*Uterine Hemorrhage* in its various forms, but more particularly the forms incident upon pregnancy, are discussed by Dr. G. F. HUNT, and the appropriate methods of treatment are considered under each head. In the treatment of accidental hemorrhage in the eighth or ninth month, where the flow of blood is constant, the uterine pains weak and ineffectual, and the patient's strength much exhausted, the author strongly recommends perforating the head and introducing the hook, and generally succeeds in saving the patient. This in some parts of the world would be considered as rather heroic, and to be adopted only in extreme emergency, when the loss of the child is beyond question. We would invite Dr. Hunt's attention to the admirable consideration of the subject in Dr. King's paper on Placenta Prævia contained in the Indiana State Medical Society's Transactions for 1879. Four other obstetrical papers were presented and are included in this volume. One on *Version or Forceps in Pelves Narrowed in the Conjugate Diameter*, by Dr. GEO. SEILER (giving a very fair consideration of the present status of this important question), and the other on *Presentation of the Funis*, with notes of ten cases by Dr. J. G. MEACHEM, Jr.

An interesting article on *Acute Anterior Poliomyelitis* (or Infantile Paralysis) with a report of three cases in children is contributed by Dr. JAS. DORLAND, in which the clinical features of the cases (which all occurred in one family) are clearly detailed, with some remarks upon treatment, in which electricity and cod-liver oil prominently appear.

A case of *Medullary Cancer of the Left Kidney*, with involvement of surrounding viscera, was reported by Dr. GEO. M. STEELE, with some remarks upon the pathology and course of this malignant form of growth. It is remarkable that in these cases uræmic symptoms are never observed.

The present volume is handsomely printed on extra paper, and the clear typography greatly enhances the pleasure of reading this exceedingly practical and more than usually valuable series of papers. F. W.

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ART. XXIX.—*Du Rheumatisme Chronique Noueux des Enfants et de son Traitement.* Par le Dr. MONCORVO, Membre de l'Académie Imperiale de Médecine de Rio de Janeiro. Traduit de Portugais et annoté par le Dr. MAURIAC de Bordeaux. 8vo. pp. 148. Paris: Octave Doin, 1880.

*On Chronic Nodular Rheumatism in Children and its Treatment.* By Dr. MONCORVO.

CHRONIC nodular rheumatism occurring in children forms the subject of a monograph which was submitted to the Société de Médecine et de

Chirurgie de Bordeaux by Dr. Moncorvo, on the occasion of his candidature for the title of Corresponding Member of that Society, and is a paper which, apart from the fact that it is the only monograph which has appeared on this subject, by its general thoroughness has warranted its publication in a more accessible form than the original Portuguese.

The author's attention was directed to the subject in 1874, when he had under his care a little girl, aged two and a half years, of a marked lymphatic temperament, and who had been nourished by a large number of wet-nurses, in most of whom some scrofulous or rheumatic taint was detected. The child when only a few months old was greatly debilitated by a severe and prolonged attack of whooping-cough, which left her pale and feeble, with glandular enlargement and a tendency to attacks of impetigenous eruptions. The rheumatic symptoms appeared, without exposure to wet or cold, as a subacute rheumatic fever, implicating the knees; after the febrile symptoms subsided the radio-carpal and tibio-tarsal articulations became implicated but without any renewal of the general febrile reaction; the symptoms then remained stationary for about a month, when febrile symptoms again appeared, accompanied by exacerbation of the articular disorder and an inflammatory œdema of both legs. This second crisis disappeared and the case developed into one of marked chronic nodular rheumatism, the condition of the patient being thus described by the author: "Incomplete extension of the lower limbs, due to the retraction of the muscles and ligaments of the knees (pseudo-anchylosis), and interfering with the erect posture; external lateral deviation of the legs, particularly of the left (angular anchylosis). Contracture of the flexor muscles of the legs on the thighs and of the thighs on the trunk. Retraction of the posterior ligament of the knees, preventing, as we have already said, extension of the legs. Crepitation, due to the rupture of 'osseous stalactites,' was readily produced on energetic motion of the diseased joints." The phalangeal articulations of the thumbs and index fingers, the wrist and great toes, are the seat of extremely painful nodes. No cardiac lesion was ever discovered.

This case furnished Dr. Moncorvo with the text for a thorough and systematic study of the occurrence of rheumatism in children, the multiple etiological conditions which tend to develop this affection, among which he recognizes heredity and the bad hygienic states dependent on want as important factors, its medical geography, symptomatology, pathological anatomy, diagnosis, prognosis, and treatment. The treatment of this disease has been above all studied with the greatest care. He has passed in review the numerous medications which have been proposed, with most of which, with the exception of cold baths and salicylic acid, the latter not being introduced by Dr. Sée until 1877, he had himself had experience in the treatment of his case, before it occurred to him to employ electricity. This latter remedy he recommends most highly as a certain and radical cure, and certainly his statements seem to be warranted by his remarkable success. He used both the constant and induced currents; the former from twenty-four chloride of silver elements (Gaiffe) was passed for ten minutes every other day through the diseased articulations; on the alternate days the induced current from a small Gaiffe bisulphate of mercury battery was passed through the atrophied muscles. At the close of each séance massage and the gradual breaking up of the adhesions in the joints was practised. "After more than forty séances of electrization and massage, the patient was able to maintain herself in the erect posture

without any support and to walk in an almost vertical position. The external angular deviation of the left knee was scarcely perceptible. The nodes and pains had entirely disappeared. In these conditions we discontinued the employment of electricity and abandoned to natural movements the completion of the cure, which we are justified in terming radical, since two years and a half have already elapsed since this epoch, and there to-day exist no traces of this terrible malady."

Nearly all authors agree as to the extreme rarity of any form of rheumatism in early childhood, while a case of chronic nodular rheumatism is then almost unique, only three cases, including Dr. Moncorvo's, having been published up to the date of his communication; since then one has been reported by Dr. Daily in the *Gazette Hebdomadaire*, occurring in a little boy, and cured by douches, manipulation, and the constant current. Dr. Moncorvo's paper is then particularly valuable as furnishing a thorough study and apparently successful treatment of a disease which few physicians have an opportunity for seeing.

The translator has added notes on the employment of terebinthinate baths and statical electricity in the treatment of this affection, and a tabular statement of the frequency of occurrence of rheumatism in Bordeaux.

R. M. S.

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ART. XXX.—*Il Servizio Di Chirurgia Ostetrica al domicilio del povero. Esportazione Utero Ovarica per grave angustia di pelvi rachitica, praticata il 3 luglio* 1880, *dai sanitari dell' Ufficio d' Higiene, col concorso di quelli di beneficenza: soprapparto da nove giorni: guarigione della madre, relazione del* DOTTORI RAMELLO CANDIDO *e* BRAMBILLA LUIGI.

*Service of Obstetrical Surgery at the homes of the poor. Utero-ovarian ablation for grave rachitic deformity of the pelvis, performed on July* 3, 1880, *under physicians of the Board of Hygiene, and of the Society of Beneficence: woman nine days in labour, cured.* Reported by Drs. CANDIDO RAMELLO and LUIGI BRAMBILLA. 8vo. pp. 30. Turin, 1880.

IN the early days of Turin, large numbers of difficult obstetric cases were delivered in her hospitals, where the mortality was very great; but in the rebuilt and modernized city, with its improved hygienic conditions, the great majority of such cases are treated at their own homes, by physicians connected with certain benevolent medical societies, somewhat like those in operation in our cities. The Porro operations of Turin have been chiefly in hospital; but two of the three recoveries were in private houses. There have been thus far, 7 operations; 5 in hospital and 2 in their own homes; these two were saved, and one of the hospital cases. Perhaps, no Italian case, or any in Europe, made as remarkable a recovery considering its difficulties, as the one we are about to describe, which was operated upon by Dr. Candido Ramello, one of the younger physicians of Turin, attached to the Sanitary Municipal service. In nine months of the year 1880, this service assisted in 1013 labours among the poor, of whom 5 died, three being forceps cases (superior strait), and two cases of turning. The results of this service have been quite in contrast with those in the old maternities, where puerperal peritonitis and septicæmia have been very prevalent.

Margarita D., 19, married, of rachitic descent, seized with rickets in the first year of infancy, and at a late period attacked with caries of the right ilium. These diseases left her with dorso-lumbar scoliosis; contortion of the ilium affected; a small pelvis, and a nearly closed superior strait. She lived in extreme poverty, under the roof of a six-storied Mansard house; and in addition to all the disabilities named, had a decidedly hemorrhagic diathesis; one brother, a hæmophilian, having bled to death when three years old. She was taken in labour on the evening of June 24th, and was at first under the care of a midwife. On the fourth day a physician who was called in made a fruitless attempt to introduce the forceps, and then retiring, advised them to wait. The midwife recommended the patient to apply to the Bureau of Hygiene, which was finally acceded to on July 3d at 5 P. M., and physicians were sent to take charge of the case.

By this time, the fœtus was dead and putrid, and the woman in a condition very unfavourable for success. It was decided to perform the Porro-Müller operation, which was done at 9 P. M., after fully nine days of labor, the uterus being first secured by the constrictor of Kœberle, and then by the clamp of Thomas; the operation was performed in 27 minutes. Observations of temperature, pulse, and respiration were recorded from three to five times a day for a month. The temperature at its minimum was 98.04°, and maximum 104.01°, the latter on the seventeenth day. Peritonitis set in on the second day, with nausea, and occasional vomiting attacks. The clamp was removed on the sixth day, and the pedicle separated on the thirteenth; by the 27th day the temperature had fallen to its lowest point reached. The woman finally recovered her health entirely.

*Porro Operations since January* 1, 1880.[1]

| No. | Date. | Operator. | Locality. | Result to Woman. | Result to Child. |
|---|---|---|---|---|---|
| 42. | Jan. 2, 1880. | Dr. Hausner. | Barmen, G. | Died. | Dead. |
| 43. | " 9, " | " Previtali. | Bergamo. | " | Alive. |
| 44. | " 17, " | " L. Championnière. | Paris. | " | " |
| 45. | " 28, " | " Gus. Veit. | Bonn. | " | " |
| 46. | Feb. 1, " | " Valtorta. | Venice. | " | Dead. |
| 47. | " 17, " | " Chiarleoni. | Milan. | " | Alive. |
| 48. | " 25, " | " Mangiagalli. | " | Lived. | " |
| 49. | March 2, " | " Kaltenbach. | Freiburg, G. | " | 5 months. |
| 50. | " 7, " | " Gus. Braun. | Vienna. | " | Alive. |
| 51. | " 18, " | " Wasseige. | Liège, B. | Died. | 5 months. |
| 52. | " 20, " | " Hubert. | Louvain, B. | " | Alive. |
| 53. | " 29, " | " Cuzzi. | Modena. | " | " |
| 54. | April 8, " | " Taylor. | New York. | " | " |
| 55. | May 28, " | " Carl Braun. | Vienna. | Lived. | " |
| 56. | June 1, " | " Omboni. | Cremona. | Died. | " |
| 57. | " 13, " | " Tarnier. | Paris. | " | " |
| 58. | " 24, " | " Peruzzi. | Lugo, I. | Lived. | " |
| 59. | July 3, " | " Ramello. | Turin. | " | Dead. |
| 60. | " 4, " | " Oppenheimer. | Wurzburg. | " | Alive. |
| 61. | Aug. 16, " | " Agnew. | Phila. | Died. | 6 months. |
| 62. | (?) " | " Pasquali. | Rome. | " | (?) |
| 63. | Sept. 22, " | " Richardson. | Phila. | Lived. | Alive. |
| 64. | Oct. 21, " | " Fikl. | Warsaw. | Died. | " |
| 65. | Dec. 2, " | " Tibone. | Turin. | " | Dead. |
| 66. | " 15, " | " Gus. Braun. | Vienna. | Lived. | Alive. |
| 67. | Jan. 21, 1881. | " Parona. | Novara, I. | Died. | " |

[1] Cases from No. 1 to 42 have been previously reported, among the first fifty Porro operations. See number of this Journal for July, 1880, p. 129.

Cases 42, 51, 58, 59, 60, 61, and 63 were operated upon by the *long incision*, and the uterus turned out before it was opened. In case 60, under Dr. Leon Oppenheimer, the cervix was not constricted until after the removal of the fœtus, and the contraction of the organ; when it was clamped, as in ovariotomy. There have been in all twelve Müller operations, with six recoveries. Of the cases regarded as *favourable* for the operation, 4 recovered, and 1 died; of the *unfavourable*, 2 died; and of the *very unfavourable*, 3 died and 2 recovered. The case under review; and one in which there were symptoms of septic endometritis, from a decomposing fœtus, with gas in utero, were the two last referred to.

There have been seven recoveries in cases of osteomalacie, against twenty of rachitic deformity. The latter class of subjects is much the more numerous, and has perhaps a slight prognostic advantage over the former. With care in preparing the patient, the osteomalacic woman has a very fair prospect of recovery, and may have her disease arrested by the removal of her ovaries.

Italy has saved 10 out of 29 cases, and all Europe 27 out of 63; the whole mortality being 39 out of the 67. R. P. H.

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ART. XXXI.—*A Treatise on the Principles and Practice of Medicine: designed for the use of Students of Medicine.* By AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine and of Clinical Medicine in Bellevue Hospital Medical College, New York, etc. Fifth edition, revised and largely re-written. 8vo. pp. 1150. Philadelphia: Henry C. Lea's Son and Co., 1881.

IN preparing this fifth and greatly improved edition of his valuable work the author has not been unmindful of the limitations which the finite powers of man impose upon him in every department of knowledge, and which usually are most clearly recognized by those who have done most to extend them. Hardly any physician can attain the highest degree of knowledge in morbid anatomy and pathological microscopy and chemistry, and at the same time be equally distinguished as a learned medical scholar, an accomplished clinical teacher, and a skilful practitioner of medicine. The limits of life and attainment are such that, with rare exceptions, the greatest men are greatest only in a comparatively narrow sphere, from which indeed, the light of their genius and the fruits of their labour may be diffused upon other fields in which they are not without rivals. Hence it is that in every work upon a composite subject like medicine, inequalities of merit are inevitable in its several parts when they are all executed by the same hand.

That the author of the present treatise was conscious of this hindrance to its ideal perfection is shown by his employing the collaboration of Dr. Welch, one of his colleagues in the Bellevue Hospital Medical College, where he holds a lectureship on Pathological Histology. The share assigned to him in the work has been well performed. He appears to have caught the spirit of his principal in distinguishing between the intrinsic and the accidental, the settled and the conjectural, in his department. Such partnership in a treatise embracing both pathology and therapeutics and intended as a guide for practitioners as well as a text-book for students of medicine, is peculiarly appropriate.

Even if Dr. Flint's position were not so well established as it is, he would easily be recognized by any competent reader of this work as a physician whose long experience and dispassionate judgment have led him to form definite opinions upon most of the subjects he undertakes to discuss. His conclusions, without being in the least dogmatic as to form, have generally the weight of judicial decisions. He has no theories to advocate or defend, for he belongs to that school which has never been without witnesses in the world, and which, while not indifferent to creeds, places truth above all creeds. This is the spirit which inspired the following passage in the preface:—

"In making changes, the author has not been influenced by any sense of obligation to maintain consistency of views with the previous editions of this treatise, or with other works which he has written. Wherever statements are found to vary from those made at a prior date, the simple explanation is that the latter, in the light of more recent reflections and enlarged knowledge, seemed to him no longer tenable."

It is in a like spirit that the whole work has been revised, and how conscientiously may be learned from this statement. After alluding to the work of his associate, Dr. Flint says:—

"In other portions of the treatise will be found many changes, which have somewhat enlarged the size of the volume, in spite of the omission of a considerable amount of matter, and the re-writing of many portions with a special view to condensation. Among these changes are, the introduction of a new section, devoted to the diseases of the hæmatopoietic system, the classification of the diseases of the nervous system on an anatomical, in place of a symptomatic, basis, a fuller consideration of various diseases, and the addition of several which were not considered in the previous editions. In the descriptions of individual diseases, larger space is accorded to the morbid anatomy, including histological appearances, and to the pathological character. In short, it may be claimed for the present edition that the eliminations, substitutions, and additions render it essentially a new work."

Whoever carefully examines the volume will admit that this statement is a very moderate one of the increased value of the present as compared with former editions. And yet there may be some who will be disappointed that so small a space in the volume is occupied by eulogies of those new remedies which flaunt before the searcher after knowledge in ultra-scientific journals and treatises, which swarm in legions like vermin upon the covers and advertising sheets of medical periodicals, and even impertinently thrust themselves into the very midst of the text between the leaves of such publications. Of the class of medicines called antipyretic, from cold water to aconite, Dr. Flint speaks with marked hesitation, and as briefly as the necessity of mentioning them at all will permit. He cannot divest himself of the ancient belief that while the physician bestows the care, nature performs the cure. His own accurate observations upon this subject, in regard to several diseases, leave him no other alternative. There is little evidence in the work of his faith in the doctrine that the symptoms of disease rather than its fundamental state are the primary object of therapeutics. He would not have us believe that for every cord in this "harp of a thousand strings" the materia medica holds some consonant drug. If he must choose between the *vis medicatrix naturæ* and the *nimia diligentia medici*, he does not hesitate to pronounce in favour of the former.

Its predominant good sense is one of the qualities which have caused Dr. Flint's treatise to be so highly esteemed; and as the present edition has all

the merits of the earlier ones, and, in addition, a large amount of scientific as distinguished from clinical information which was less conspicuous in them, it cannot fail to confirm and increase the reputation of the work which they established.

Another distinctive feature of this volume, and one in which it surpasses similar English, and, we believe it may be added, French and German treatises of the same description, is the completeness of the sections relating to diagnosis. Completeness, with accuracy and conciseness, it may be added. This portion leaves upon the mind distinct and sharp cut impressions. It is what a physician, in ignorance or doubt respecting diagnosis, most of all desires. He is apt to be irritated by half statements which appear to him more like the non-committal promises of officials than the naked truth which is an attribute of genuine science. He desires to learn the limits of possible knowledge as well as of positive ignorance. To such a searcher after truth this work brings relief even when it does not supply definite information.

In a word, we do not know of any similar work which is at once so elaborate and so concise, so full and yet so accurate; or which in every part leaves upon the mind the impression of its being the product of an author richly stored with the fruits of clinical observation, and an adept in the art of conveying them clearly and attractively to others. A. S.

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ART. XXXII.—*Medical Diagnosis with special reference to Practical Medicine. A Guide to the Knowledge and Discrimination of Diseases.* By J. M. DA COSTA, M.D., Professor of Practice of Medicine and of Clinical Medicine at the Jefferson Medical College, Philadelphia; Consulting Physician to the Children's Hospital, etc. etc. Fifth edition, revised. 8vo. pp. 924. Philadelphia: J. B. Lippincott & Co., 1881.

THE first edition of this work was published in 1864. An extended analytical review of that edition, in this Journal, ended with the following words: "It may be welcomed as a text-book, which will do credit to our national medical literature." The estimate of its value, as thus expressed, was confirmed by the favourable consideration which it received both at home and abroad, and was substantiated by the speedy exhaustion of the first edition. During the sixteen years which have elapsed, the work has passed through four editions, and its position as a valuable text-book has been steadily maintained.

The success of a work devoted chiefly to diagnosis, shows, first, that the medical profession appreciate the importance and the difficulty of that branch of medicine, and, second, that the work fulfils most satisfactorily the objects for which it was written. It is unnecessary to say more of the merits of the work. In doing so, the writer of this notice would simply repeat the opinions which he has expressed in his notices in this Journal of the subsequent editions.

In revising the work for the fifth edition, the author has found it necessary to rewrite in a measure the chapters on the nervous system and on the blood. New developments within late years relate especially to these nosological divisions. The evidences of a thorough revision are also apparent in other portions of the work. The revision secures for this edition

a position in relation to the medical knowledge of to-day, corresponding to that which the first edition held at the time of its publication. We congratulate cordially the author on the completion of the task of preparing a new edition, and on the merited success of the work for the future as in the past. A. F.

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ART. XXXIII.—*Treatise on Diphtheria.* By A. JACOBI, M.D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, New York; Physician to Bellevue, Mount Sinai, and the German Hospitals, etc. 8vo. pp. xi., 252. New York: William Wood & Co., 1880.

FOR the quarter of a century, during which, according to the reiterated opinion of our author, diphtheria has been continuously endemic in New York City, Prof. Jacobi has had ample opportunity of combating the disease in all its phases, and of testing the value of therapeutic measures, medical and surgical, to an extent perhaps unequaled on the continent of America. From time to time, during two decades, various papers on the subject have been promulgated from his pen, and his extemporaneous observations have been recorded in current summaries of the proceedings of medical organizations. Well known, in addition, as a close student of medical literature as well as a careful, judicious, and successful practitioner of medicine, hardly any one could be named in this country from whom a treatise on diphtheria would be more warmly welcomed at the present period, when its subject is the cause of much anxious personal consideration among practitioners, and the theme of much comment in medical debate.

The treatise contains nine chapters simply headed History, Etiology, The Manner of Infection, Contagion and Incubation, Symptoms, Anatomical Appearances, Diagnosis, Prognosis, and Treatment; the chapters on Symptoms and Treatment being by far the largest of the series.

The historic record is full enough to satisfy any inquiry, and traces the appearance of the disease in the New England district as far back as the year 1659.

In contrasting the greater susceptibility of children to the disease as compared with adults, an argument is drawn from the fact that of more than two hundred and fifty cases upon whom the author had performed tracheotomy, but two were over thirteen years of age. This, however, is hardly in point; for the larger calibre of the larynx and trachea of the adult secures him from the mechanical obstruction to respiration that renders resort to the operation so incomparably more frequent in the child. As is well known, there are but one or two well attested records of successful tracheotomy for diphtheria in the adult; a result attributed to the septic progression of the disease which precedes the comparatively late period at which the more capacious air-tube of the adult becomes occluded by accumulating products.

Most writers credit males as more frequent subjects of diphtheria than females, but Dr. Jacobi does not recognize any predisposition in favour of either sex. He mentions that of some six hundred cases in which he either personally performed tracheotomy or observed the progress of the

disease in the practice of others, the majority of operations were in males, but the greater proportion of recoveries were in females.

Anatomical reasons are given for the greater susceptibility of children to diphtheria. Prominent among these are the succulence and softness of the mucous membranes involved, the greater protuberance of the tonsils, and the greater number and larger size of the lymphatics. The slightly acid secretion of the mouth beginning with the third month of life is held as a physiological reason for the comparative infrequency of attacks between that period and the tenth month Reserve is expressed as to the special influence of season of year, which is regarded as indirect and conditional, and probably comparable to those influences which may be summed up in the term "filth," whether from uncleanliness of person, clothing, food, air, or habits. The question is put whether foul exhalations, whether from sewers or filthy habits, are to be regarded as special influences or simply as causes of deterioration in the standard of health, thereby affording other morbid influences an opportunity to exercise their power. And in the uncertainty which surrounds the problem, the question remains unanswered.

After presenting the arguments usually adduced, and the authorities usually cited in favour of the organic nature of the diphtheritic poison, our author, in his summary,—and a careful summary of its arguments concludes each chapter in the volume,—denies that the presence of bacteria in the diphtheritic blood has been proven, or that there is any theoretical ground for assuming that preventing the bacteria of a diphtheritic patch from making their way through the underlying mucous membrane will, *per se*, prevent general diphtheritic infection of the system.

While acknowledgment is freely accorded to the constitutional origin of many cases of diphtheria, distinct claim is made for its frequent origin in a manner purely local; and a number of interesting examples are given of this local mode of infection, corroborative of the author's positive assertion. Attention is called to the fact that different amounts of the poison material of diphtheria may be absorbed by different individuals, and that this absorption may occur slowly or rapidly; and from these premises it is argued that there will naturally occur a difference in the severity of the constitutional manifestations and in the rapidity of the elimination of the poison on the one hand, and in the moderate amount of constitutional disturbance and the indolent course of the toxic elimination on the other.

Great stress is laid, and with good reason, on the contagiousness of diphtheria. The chapter on this subject contains several arguments abstracted from a German periodical on veterinary medicine and comparative pathology.

The chapter on Symptoms, as already announced, is one of the largest in the volume. These symptoms are narrated anatomically under the sub-headings: pharynx and palate; nasal cavities; eye; ear; epiglottis, larynx and trachea; inflammatory affections of the lungs; diphtheria of the mouth, œsophagus and the cardiac portion of the stomach; intestinal diphtheria; wounds; muco-salivary diphtheritis; skin; diphtheria of the genito-urinary organs; kidneys; the heart and blood; and the nervous system. They include, therefore, all the rare and occasional symptoms which are likely to occur during an attack of diphtheria.

The chapter on Anatomical Appearances is quite minute, detailing not only the aspect of the upper air-passages, but the changes in the heart, the

lungs, the spleen, the kidneys, the muscles, the lymphatic glands, and the intestinal canal. The peculiarities of different forms of the diphtheritic affection in certain localities are explained mainly by the varying character of the different elements of the mucous membrane in these localities. The description of the mucous membranes from mouth to bronchi is quite elaborate, and their differences and analogies are summed up in a special table. It is Prof. Jacobi's opinion that these anatomical conditions, with their attendant physiological functions, will aid in solving the question as to the "mooted difference" between croup and diphtheria; the prevalence or absence of lymphatics, the richness or poorness of blood supply, respectively favouring or repressing the development of the general phenomena and the severity of their symptoms.

"It can easily be demonstrated," too, the author states, "that where the elastic tissue of the mucous membranes is present to a large amount, an antagonism to diphtheritic impregnation is maintained for a long time, but when it is obliged to yield, there is a corresponding resistance to recovery." In all probability the intensity of the process which becomes infective over great obstacles, so profoundly impairs the powers of resistance that they are rendered incapable of sustaining themselves; and thus re-convalescence is slow or impossible.

The chapter on Diagnosis shows us how frequently it is difficult to exclude the diagnosis of diphtheria from absence of special indications, which, under ordinary circumstances, are characteristic. Thus absence of membrane, of fever, of lymphadenitis do not necessarily impair the diagnosis, though membrane, fever, and lymphadenitis are the most prominent symptoms of diphtheria.

Dr. Jacobi acknowledges the existence of primary diphtheria of the trachea and ascending croup, though admitting its infrequence. An abrupt attack of stenosis of the larynx, with resultant cyanosis within an hour or less thereafter, is mentioned as the prominent indication for the diagnosis of this fatal form of diphtheria. In some fifteen cases of this kind operated upon by Dr. Jacobi, not one lasted longer than a day from the commencement of urgent symptoms to their end in death, and many of them lasted but a few hours only. The prognosis varies with the character of the epidemic actually prevailing. While considering ten per cent. a high death-rate, the author states that in severe epidemics the mortality is ninety-five per cent., just the opposite to the mortality of five per cent., which in many a year it did not exceed. While in average epidemics tracheotomy will save twenty per cent., in fifty consecutive tracheotomies from 1872 to 1874, Dr. Jacobi did not see one recovery. As to individual cases, it is believed that there is hardly a disease in which the prognosis is more uncertain than in diphtheria.

The chapter on Treatment, occupying eighty pages, discusses almost all the remedies, some named in Latin and some in English, which have been used systemically or locally in the management of diphtheria; even to the employment of *massage*, recommended within the year by Biela Weiss, and recalling to our mind a fifteen-year old pamphlet of the Director of the Kinesopathic Institution at Cassel, in which all the motions for treating croup by nature's method of percussing the neck, stroking the windpipe, and rolling the head so as to loosen the membrane, are illustrated with expressive wood-cuts; not to speak of various other manipulations with chest, abdomen, arms, etc., calculated to produce the same result! Jaborandi seems to be almost, if not quite, the only drug that has escaped

the scrutiny of the author. The author concludes, after all this expression of opinion and description of methods, that every case should be treated on general principles. Alcohol is, with him, an important adjuvant and remedy, employed in doses of from two to twelve ounces daily according to circumstances. Debilitating complications, such as diarrhœa, must be stopped instantly. Acute catarrh of mouth and pharynx requires the use of potassium or sodium chlorate, in doses not exceeding one scruple daily for a child of a year, and two drachms for an adult, the single doses being small and repeated every hour, half-hour, or fifteen minutes; large doses being liable to induce nephritis, or even to prove fatal.

Locally, the main indication is local disinfection. Chloride of iron is indicated as one of the most reliable antiseptic and astringent agents; small doses at long intervals being useless, and moderate doses frequently repeated having a satisfactory general and local effect. At least one drachm of the tincture, daily, is given to a child of a year, and two or four times the amount to one of two or three years. It is directed to be mixed with water and glycerine so that a dose is taken from every hour to every ten minutes as may be required. In this way the local application to the throat, it is averred, becomes superfluous.

This treatise of Dr. Jacobi is comprehensively and carefully prepared, and is, in our estimation, the best volume on diphtheria to which the American practitioner can have access. J. S. C.

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ART. XXXIV.—*Imperfect Hearing and the Hygiene of the Ear.* By LAURENCE TURNBULL, M.D., Ph.G., Aural Surgeon to the Jefferson Medical College Hospital, etc. 3d ed., 8vo., pp. 147. Philada.: J. B. Lippincott & Co., 1881.

THIS brochure is the third edition of Dr. Turnbull's little book on "Tinnitus Aurium." The fact of its having gone through two editions is an evidence of its popularity with the profession. The present issue is an enlarged one, and a number of other topics of interest to the otologist and general practitioner have been added. So that the book now is simply a collection of monographs upon several important otological subjects. There has also been added an introduction, in which the recent progress of otology is traced. Chapter I. is devoted to the "Limit of perception of Musical Tones by the Human Ear." Chapter II. deals with "Tinnitus Aurium and Observations on Aural or Auditory Vertigo with Diagnosis and Treatment," in which Dr. Turnbull gives his experience in the use of hydrobromic acid and hydrobromic ether in the treatment of that most annoying of all aural symptoms, tinnitus aurium. This experience has been eminently satisfactory to the author, and it is hoped the profession may give these remedies a fair trial. Chapter III. is on the "Importance of Treatment of the Naso-pharyngeal Space, Tonsils, and Uvula in Acute and Chronic Catarrh of the Middle Ear." Chapter IV. is on "Artificial Perforation of the Membrana Tympani." Chapter V. "The Mastoid Region and its Diseases, with Illustrative Cases." Chapter VI. "On the Hygiene of the Apparatus of Hearing, with the Prevention of Deafness," in which many valuable hints and suggestions as regards the care of the ear are given. Chapter VII. "On the Method of Educating the Deaf-

mute at home, and on the Selection of Proper Schools for the Deaf and Dumb," a subject in which the non-professional man is interested as much as the professional. Chapter VIII. "A comparison between the Audiphone, Dentaphone, etc., and the Various forms of Ear Trumpets," in which the experience of the author is stated as coinciding with that of all others who have experimented with the Audiphone and Dentaphone, viz., that they are in every respect inferior to the ordinary ear trumpet.

On all of these subjects, Dr. Turnbull has much to say that would interest the specialist as well as the general practitioner. He shows himself familiar with the literature of the subjects he writes about, and has given—when necessary—abundance of cases from his own practice to illustrate the positions he has taken. S. M. B.

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ART. XXXV.—*Coulson on the Diseases of the Bladder and Prostate Gland.* Sixth edition, revised by WALTER J. COULSON, F.R.C.S., etc. 8vo. pp. 607. London: J. & A. Churchill, 1881.

IT is not surprising that, after a lapse of twenty-five years since its last edition, many and considerable alterations should have to be made in the text of a work on the diseases of the urinary bladder. The science of surgery has, in this time, made great strides forward, the surgery of the genito-urinary organs keeping step, more or less, with its fellows. The changes of the past quarter of a century have, however, in this particular department, been more in the direction of learning the refinements of physiology and pathology and elaborating the details of treatment and operations, than in that of discovery or actual invention. What is, is better understood, and what may be done, can be more rationally carried out than formerly; but nothing radically new has been added to the treasures of the first half of this century.

The book before us has served two generations, faithfully representing the current opinions of both. It comes again before the medical public fitted to the wants of the present day. In theory and practice it may be referred to with confidence by the student or the surgeon. In the former regard, we find it especially satisfactory; the views expressed being fully abreast of the times, and giving evidence of a wide and well-selected reading. We find at the beginning of the book a full discussion of the question as to the power of absorption possessed by the mucous membrane of the bladder, the conclusion arrived at being that of Mercier, that when the epithelial coat is intact—which it very often is not—absorption is almost impossible. The discussion of the physiology of micturition is very interesting, a variety of experiments and conclusions being quoted with the greatest impartiality. We think, however, enough is not made of the fact that the emptying of the bladder is a positive act of the will, that natural retention is only the suspension of this act, that unnatural retention is always dependent upon mechanical obstacles, paralysis of the detrusor muscles, or abnormal and perverted motor impulses to the sphincters; while, on the other hand, incontinence depends upon the existence of unnatural passages, paralysis of the sphincter, or abnormal motor impulses to the detrusor muscles. We think, too, that the sphincter action of the perineal and urethral muscles is not sufficiently emphasized;

an action not only sufficient, when involuntary, to keep the bladder from emptying itself *guttatim*, but also strong enough, when acting under the will, to resist very powerful involuntary efforts of the bladder to discharge its contents.

The chapters on cystitis are excellent, but might be more concisely and systematically arranged. This is especially true of the important matter of examination of the urine, directions for which are scattered about, when they should be given a chapter by themselves, to be referred to whenever necessary. The chapter on fistulæ of the bladder contains a second-hand description of Bozeman's method of operating for vesico-vaginal fistula. This is perhaps as much as can be expected in a work of this character; but surgeons who have such an operation to perform will probably not be satisfied with less than they can find in American works on the diseases of women.

Neuralgia and irritability of the bladder receive careful and thorough consideration from Mr. Coulson. Their symptomatic value is properly emphasized, and the way to search for their causes indicated. An analysis of the urine is the first and an indispensable step in every such case, a step that is as yet far less understood by medical men than it should be, though there has been of late considerable improvement in this respect. For the irritability in children, dependent upon a long and adherent prepuce, the author suggests the propriety of circumcision—an operation quite common in this country. In speaking of atony of the bladder, there is cited a case where the attending physician was struggling to overcome a fancied inability to retain the urine, and where a consultant at once drew off five pints. This is given as a warning against a mistake which only gross ignorance or carelessness could bring about. Medication for atony or paralysis of the bladder is recommended in a tentative way, Lebert being quoted as an authority against the use of ergot and nux vomica, and Gross as thinking them both efficacious. It is surprising that the author gives no personal experience to help in deciding this question. In the chapter on hæmaturia the microscope is said to afford the surest means by which blood may be discovered in the urine; it might be said to afford the only reliable means. There is good space wasted in quoting descriptions of the appearance of blood cells, space which might far better have been occupied with a cut; for any one who has paid much attention to this subject knows that the ability to recognize blood corpuscles or, indeed, almost any of the solid matters in the urine, is acquired by seeing them, best of all under the microscope and with the guidance of a teacher, and next in well executed drawings. In reading this chapter, we wish again for one which shall once for all describe systematically the methods of examining the urine. Hæmatinuria, or hæmoglobinuria, as it is called, might, we think, have been mentioned in this chapter, since its rare observance heretofore may be partly due to the fact that so many men have never heard its name.

The author devotes two hundred and fifty pages to the subject of calculi of the urinary passages, constituting by all means the most valuable part of the work. It is pleasant to find here and elsewhere in this book appreciation of the work of that patient and thorough observer and admirable teacher, Ultzmann, whose investigations have done so much to throw light upon the origin of vesical calculi. In reading, in the pages on the symptoms and diagnosis of stone in the bladder, of the difficulties sometimes encountered, we were reminded of an operation we witnessed, and which

has never yet been published, where the operator, having cut an old man, could not find the stone. Every effort to do so failed. Finally, a distinguished bystander bared his arm, oiled his hand, insinuated it and half his forearm into the patient's rectum, felt all round, even thrusting the wall of the abdomen up with his fingers to demonstrate the reliability of his statement that he had thoroughly explored the pelvis, and declared there was no stone there. Yet, a few minutes later, the operator, who could not give up, even on such evidence, seized with the stone-forceps and withdrew a calculus larger than a walnut.

The chapter on lithotomy is excellent, and is supplemented by one exclusively devoted to the method of Bigelow,[1] which he has named litholapaxy. The success of this new method may now be regarded as thoroughly established. It is growing in favour in this country, and a recent letter from London assures us that, since its introduction in England, "lithotomies in the adult have become even more scarce than they were before."

It is not to be wondered at that Cheselden's operation is the method of lithotomy the author thinks the best. He is not unacquainted with other methods, of course, and they receive due mention. The first he considers is suprapubic lithotomy, which he says is called the high operation—an awkward name which ought to be, and is to a very great extent, abandoned. This method receives a qualified dismissal as rarely to be adopted.[2] The author fortifies his judgment by giving a full account of a badly managed operation by Civiale. He need not have gone so far to illustrate his point, as two cases never published, but known all about in Edinburgh, would probably have served his purpose equally well. And, if in the mood to read of horrible operations, he might turn to Sir Astley Cooper's *naïve* report (in his *Surgery*, London, 1836, p. 385) of his operation, by the lateral method, on "Mr. ——, of Fore Street, in the City."

The recto-vesical operation is also rejected by the author; we think properly so. The bilateral and median operations present no advantage, in his opinion, over the lateral. This latter, Cheselden's operation, is to almost all lithotomists the method of election. It is fully described here, and its statistics compared with those of other methods. The solvent treatment of calculi the author thinks only applicable to small uric-acid stones. The preventive treatment suggested consists in attention to hygiene and the administration of alkalies and diuretics with a view to prevent the precipitation of the salts of the urine.

The concluding chapters treat of the affections of the prostate gland.

As a whole, we can speak very highly of Mr. Coulson's book; it is full and thorough, its style is easy and clear, and, as a monument to its original author, it deserves admiration. If there are defects in it they are in the direction already indicated. Much has been gathered from modern writers—Gross, Ultzmann, and Podrazki, being the most frequently appealed to—but we would be glad to have more of the personal experience and opinions of the author and the editor. There is too much tendency in these days to make books encyclopædic, to fill them with references and bibliographies. This may be well enough for young and inexperienced writers, but when we come to men of large experience and observation, whose names are well known, we are apt to want their conclusions, even if they

[1] American Journal of the Medical Sciences, Jan. 1878, p. 117.

[2] The subject of supra-pubic lithotomy has been very thoroughly investigated by the writer of this review, and the conclusions he has come to are far more favourable to it than those of Mr. Coulson. (See *Amer. Journal of the Medical Sciences*, July, 1875, July, 1877, and April, 1878.)

have sometimes to be given dogmatically; and we care more for what they have winnowed out of the grain they have gathered than to be never so candidly showed the whole heap, and offered the opportunity to go through the process for ourselves. C. W. D.

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ART. XXXVI.—*Health Reports.*

1. *Third Annual Report of the State Board of Health of Connecticut for the fiscal year ending November* 30, 1880; *with the Registration Report for the year ending Dec.* 31, 1879. 8vo. pp. 252. Hartford, 1880.
2. *Report of the Board of Health of the State of Louisiana for the year* 1880. *Extracts containing report of* JOSEPH JONES, M.D., President, *together with official correspondence with National and Local Boards of Health; and Quarantine and Sanitary rules and regulations of the Board.* 8vo. pp. 149. New Orleans.
3. *Sixth Report of the State Board of Health of California for the year ending June* 30, 1880. 8vo. pp. 136. Sacramento, 1880.

1. THE *Connecticut* Health Report opens with a concise yet comprehensive digest of the sanitary investigations it records, furnished by the able secretary of the Board, Dr. C. W. Chamberlain, from which we gather the gratifying intelligence, that an improved public sentiment in regard to sanitary affairs is manifested throughout the State, and that in many well-known instances, individuals and health authorities have successfully contended with the hygienic problems, pressed upon their attention in previous reports.

Dr. Chamberlain informs us that though there have been a greater number of epidemics than the previous year, the mortality was not excessive. Measles was exceedingly prevalent, scarcely any children escaping, and second or even third attacks occurring. Local epidemics of typhoid fever were reported from several sections, and in one of these instances the infection was traced, as shown by a map, to the pollution of the soil from sewers. Smallpox has reappeared in the mortality lists for the first time since 1876, but a threatened epidemic was averted by prompt isolation of cases and vaccination of exposed persons. Urgent attention is again called to the danger of using ice from ponds the water of which has been contaminated by sewage, and this curious proof that the typhoid fever germs (like the yellow fever germs) are not killed by a freezing temperature seems worthy of special notice.

A thoughtful and suggestive letter from Prof. W. H. BREWER upon *Public Health* vs. *Public Wealth* is worthy of a wide circulation among the legislators of other communities besides those of New Haven, to whom it is addressed.

Among the special reports, that of Robert Briggs, Esq., the eminent civil engineer of Phila., upon the plans for warming and ventilating the Bridgeport School-house, should be carefully studied by sanitarians. Dr. Chamberlain's paper upon sewerage problems is of particular local interest to the inhabitants of the towns of Hartford and New London, but it also contains much general information upon the subject of our means for the disposal of waste and polluted water.

The question of the transmission of tuberculosis by the meat and milk

of infected animals, is discussed by Dr. N. Cressy, V.S., who arrives at the conclusion, that, since the experiments of Villemin, Chauveau, Colin, Bollinger, and others, have shown that tubercular disease of almost all the organs of the body can probably be conveyed by the ingestion of meat and milk from infected cattle, it is time for our most enlightened minds and professional experts, to devise and enforce such measures as will protect our tables, control the traffic in diseased food, and if possible stamp out the malady among our herds. The whole subject is of great interest and importance.

This report also contains interesting information concerning the work of the Board in examining railway employés in reference to colour-blindness, which is noticed upon another page.

2. The *Louisiana* Report is chiefly made up of documents to prove that the National Board of Health was wrong in its assertion that yellow fever existed in New Orleans during the summer of 1880. Now it must be admitted that, as the event proved, there was no need of any of the threatened quarantines against New Orleans, although it is impossible to say how far the dread of these annoying and vexatious measures had to do with the thorough disinfection of suspected persons, places, and cargoes, which appears to have been very thoroughly practised by the Louisiana Board of Health; so that practically the question whether one or two dozen of the suspicious cases of fatal "hemorrhagic malarial fever" (accompanied by black vomit) were really yellow fever or not, possesses but little general importance from a sanitary point of view.

As a problem in diagnosis it is almost impossible to decide between the two opposing authorities, without more complete data than those furnished to us in our copy of the report, from which by an error (doubtless of the binder), pages 104 to 113, upon which are printed, we presume, most of the details of the suspicious cases, have been omitted.

We trust that a more general conviction of the great advantage to the whole body politic of all the States in our Union, arising from prompt and hearty obedience to *one* central authority, upon matters of national quarantine, will induce our southern brethren to voluntarily submit, in the near future, to the regulations promulgated by the National Board of Health.

3. Dr. F. W. Hatch, permanent secretary of the *California* Board, records, with much gratification, a smaller death list, and the absence of any serious epidemic except pneumonia. A few cases of smallpox were reported, and, in the crowded tenement houses of the Chinese quarter of San Francisco, it threatened to become epidemic, but energetic, though severe, measures of isolation and disinfection practised by the Health authorities averted this misfortune. Consumption is credited with 954 deaths, or about 16 per cent. of the total mortality, and of these 954, 147 were among persons born upon the Pacific slope, 270 on the Atlantic border, and 524 were of foreign birth. The unsanitary condition and total disregard of hygienic rules manifested by the native Mexican and lower half-breeds are thought to predispose to phthisis. Pneumonia was very prevalent, causing 505 deaths, or about 8 per cent. of the total mortality.

Dr. Hatch further contributes a long and valuable paper upon the mineral springs of California (which should be consulted by every physician who directs a patient to those fountains of health), and also a report upon the sanitary condition of the city of Sacramento. Dr. J. P. Widney

offers some useful suggestions respecting "Sanitary defects in houses and manner of living." The report of a committee on the establishment of a State Hospital for consumptives signed by Drs. F. W. Hatch, H. Gibbons, Sr., and W. R. Cluness, awards the preference to Atlas Peak in Napa County, as combining all the advantages of location in the highest degree, and incidentally affords valuable information to invalids seeking the advantages of the equable climate of the Pacific coast. A digest of the Health Laws of California occupies the remainder of the volume.

J. G. R.

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ART. XXXVII.—*Cyclopædia of the Practice of Medicine.* Edited by Dr. H. Von ZIEMSSEN, Professor of Clinical Medicine in Munich, Bavaria. Vol. IX. *Disease of the Liver and Portal Vein, with the Chapter relating to Interstitial Pneumonia.* By Prof. PONFICK, of Rostock; Prof. THIERFELDER, of Rostock; Prof. Von SCHUEPPEL, of Tuebingen; Prof. LEICHTENSTERN, of Tuebingen; Prof. HELLER, of Kiel; and Prof. JUERGENSEN, of Tuebingen. *Translated by* ARTHUR H. NICHOLS, M.D., and HAMILTON OSGOOD, M.D., of Boston; EDWARD W. SCHAUFFLER, M.D., of Kansas City; and WALTER MENDELSON, M.D., of New York City. ALBERT H. BUCK, M.D., New York, *Editor of American Edition.* 8vo. pp. viii., 928. New York, William Wood & Company, 1880.

WITH the issue of the present volume the publishers complete the series comprised under the title of "Ziemssen's Cyclopædia." Originally designed to appear in fifteen volumes, the work has outgrown its proposed dimensions until it now numbers seventeen volumes, the additional volumes having been rendered necessary by the unexpected accumulation of material.

In a few points the gentlemen who have written for this volume will be found to hold views differing somewhat from those taught by Prof. Frerichs in his classical work on "Diseases of the Liver." This is notably true of Ponfick's explanation of those cases in which jaundice occurs independently of obstruction of the gall-ducts. It will be remembered that in Frerichs' opinion the icterus is due, under these circumstances, to the conversion of the biliary acids, which are constantly being absorbed from the intestines into bile-pigment; while Ponfick, on the other hand, teaches that it is frequently due to the extensive destruction of the red blood corpuscles and the subsequent change of hematin into bilirubin. This view is, of course, not novel, but it has much to recommend it. Indeed it is not easy to explain in any other way the sudden occurrence of jaundice after a fright, or during a paroxysm of anger, or other violent emotion.

Thierfelder has introduced a brief notice of a condition which has been recently fully described by Charcot and others, and which we have some reason to believe is not generally recognized in this country. We refer to "hypertrophic cirrhosis with icterus." The first symptoms of this disease are derangements of the digestive function, pain in the hepatic region, icterus, and fever. The jaundice is usually decided, but is not necessarily associated with decoloration of the feces. It often persists, though with fluctuations, during the entire course of the affection. Very soon, enlargement of the liver is added to these symptoms. This increase in size is often considerable, frequently causing the organ to project in the mammary

line three or four fingers' breadth below the arch of the ribs, and sometimes very much lower. The left lobe is occasionally more affected than the right, and may extend even into the splenic region. The weight of the liver amounts to between 2000 and 3000 grammes; its form is often not perceptibly altered, its free margin is sharp, its outer surface smooth or studded with flattened prominences, not larger than a small pea.

Any reduction in the volume of the organ appears, Ponfick says, extremely rare, even when the affection is of quite long duration, and he has never known it to be reduced below its natural size. The duration of the disease is usually very much greater, and the occurrence of cachexia and emaciation much longer deferred than in the ordinary form of cirrhosis. Ascites, if present at all, occurs much later. Death is often ushered in by severe cerebral symptoms. According to Charcot, the primary lesion in this disease consists in an inflammation of the interlobular gall-ducts induced by an unknown cause. This gives rise to an interstitial proliferation which takes its start from the walls of these ducts.

One of the most interesting articles in the volume is that by Juergensen on "Interstitial Pneumonia," or, as we should prefer to call it, "Fibroid Phthisis." It seems out of place, however, in a volume consecrated to the description of diseases of the liver, and will probably escape the attention of many students, who would otherwise be only too glad to consult it. We remember having to point out a similar incongruity in the contents of one of the other volumes. As the article is too long to be discussed in a brief notice like this, we shall only call the attention of our readers to the prominence which its author gives to hæmoptysis as a sign of the disease. "The spitting of blood," he says, "especially the oft-repeated variety, is far more common in the chronic forms of lung disease not leading to phthisis[1]—the anatomical basis of which forms interstitial pneumonia—than it is in phthisis, whether the latter be accompanied by the development of tubercles or not."

This volume is, like its fellows in the series, enriched by full bibliographies which precede the articles in each special subject. The reader will, however find a more frequent reference in them to German authors, than to those of any other nationality.

In concluding our notice of this series, it is proper to say that we see no reason, now that the work is complete, to modify materially the favourable opinion we have expressed from time to time in regard to it, while it was in process of publication. The most serious defect we have found in it, is that scarcely sufficient attention is paid to the treatment of disease. On the other hand, the descriptions of the pathology of the different diseases are usually excellent, and much fuller than is to be found in any other work on the Practice of Medicine with which we are acquainted. J. H. H.

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ART. XXXVIII.—*John Hunter and his Pupils.* By S. D. GROSS, M.D., LL.D., D.C.L. Oxon., LL.D. Cantab., etc. 8vo. pp. 106. Philadelphia: Presley Blakiston, 1881.

A REQUEST, by the Philadelphia Academy of Surgery, to deliver the first anniversary address, led to the production of this memoir. Prof.

[1] *I. e.*, cheesy degeneration of the lungs.

Gross has written much; but it cannot be said of him, that it would have been better had he written less. Medical literature owes to him a vast debt of gratitude for all that he has written. For this, his latest production, he selected a grand theme, and it is grandly handled. He has written a charming memoir of Hunter and his pupils. It will be read with profit as well as pleasure. May the distinguished author, honoured over the world, and beloved by all who enjoy his personal friendship, live many years longer; and may he continue his contributions to medical literature as long as he lives! A. F.

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ART. XXXIX.—*Recent Works on Typhoid Fever.*

1. *Croonian Lectures on some points in the Pathology and Treatment of Typhoid Fever. Delivered at the Royal College of Physicians of London.* By WILLIAM CAYLEY, M.D., F.R.C.P., Physician to the Middlesex Hospital and to the London Fever Hospital, Lecturer on Medicine to the Middlesex Hospital School of Medicine. 12mo. pp. 126. London: J. & A. Churchill, 1880.
2. *Relapse of Typhoid Fever, especially with reference to the Temperature.* By J. PEARSON IRVINE, M.D., B.Sc., F.R.C.P. Lond., Assistant Physician to Charing-Cross Hospital; Physician to the Victoria Hospital for Children; etc. 8vo. pp. 144. London: J. & A. Churchill, 1880.

1. DR. CAYLEY'S three lectures, which now appear in book form, were originally published in the London *Medical Times and Gazette* (March, 1880), shortly after they were delivered. In the first lecture the author discusses the question of causation and mode of dissemination. He points out our ignorance of the nature of the typhoid poison and our failure to isolate it or demonstrate its microscopical or chemical properties. That the specific poison introduced into the system multiplies, that it is contained in discharges of the patient, and that thrown into the drains, cesspools, etc., it retains its activity or power of re-development for a long period, when again placed under favourable circumstances, are the practical points of our knowledge or deductions.

Of the subsidiary question whether the typhoid poison can be generated *de novo* or only by continuous propagation, the author expresses his belief that the arguments in favour of the latter method of propagation far outweigh the former. The long retention of activity by the typhoid poison and the many easy modes of communicating the disease make this question so subtle, that the proof of the *de novo* origin of a case becomes almost, if not quite, impossible—in fact, nothing short of its development in primeval and untrodden forest or an isolated island in mid-ocean, unvisited by the outer world, could prove incontrovertibly the *de novo* origin of typhoid. However, we must remember that there was once a *first* case, and that this case had a source, in what circumstances we know not. This first case either originated *de novo* or else it came as a result of evolution.

The origin or dissemination of typhoid by the meat or milk of infected animals also receives attention. Of course, in the well-known milk epidemics of this disease, the source of the poison is the contamination of the milk by water used in dairies and taken from wells into which sewage

matters containing typhoid discharges have percolated. Epidemics of typhoid fever have been recorded which were due apparently to both the milk and flesh taken from animals suffering from the disease.

Of the incubation period and its phenomena, and of the causes which lead to variations in its length, but little is positively known. The author points out that the mode of infection, the temperature, as well as certain personal and constitutional peculiarities, exercise an influence in varying the duration of this period, and of these probably the latter factor is the most potent; the amount or concentration of the poison having but little influence, since the period of incubation is the same in mild as in severe cases. We do not think this view can be maintained or that it is justified by very many well-known facts, although the author supports it very ably. Surely *à priori* the large dose of a poison must act more quickly and more severely than the small one. Take a family, having nearly the same constitutional peculiarities and all receiving the poison from the same drinking water, it is difficult to suppose that the variations in the time and the severity of the disease as shown in the various persons can be due to any other cause than the amount of water, and consequently of the typhoid poison, taken.

In the second lecture on the *pathology* of the disease, the author divides the phenomena into two classes: first, those which are peculiar to typhoid; second, those which are common to it with other febrile diseases. To the latter class belong the high temperature, the tissue degenerations and wasting, and the functional disturbances, and these phenomena he shows are not separate, distinct, and independent factors, but most intimately connected. Each of these factors is at the same time, at least partly, the cause and the effect of all the phenomena. The diminished and disintegrating blood corpuscles cause imperfect nutrition of the glandular and muscular tissues, the degenerating nervous organs, whilst failing to regulate nutrition, at the same time contribute to the irregularities of the respiratory and circulatory processes. These degenerative changes, especially those affecting the heart fibre and nervous tissues, are of primary importance, as they are unquestionably the cause of nearly all the fatal cases of typhoid, but at the same time it is to be noted that these changes are not peculiar to this fever.

Since this wasting or degenerative process is so frequently the cause of death, and is so immediately due to the high temperature, the febrile process or phenomena become the most important consideration in the pathology of the disease. The fever is due to the processes set in motion by the presence of the specific poison in the body, yet the regulation of the temperature, both in health and disease, must be referred to the action of the nervous system. And here again we have all the factors of the morbid phenomena contributing to the disturbance of the heat function; none can be excluded, and we are not in a position to dogmatize with absolute certainty on the role performed by each of these altered conditions. In other words, the high temperature is not simply an effect of increased oxidation, conditioned by rapid tissue changes, but is largely due to imperfect dispersion of the heat produced. In fact, it is possible to suppose that in every elevation of the bodily temperature, the amount of heat actually produced is less than under normal conditions, and that the increased thermometric indication is due merely to the failure to radiate heat; while less heat is produced, still less than the normal amount leaves the body. The wasting of the body, said to be due to the "burning up"

of the tissues, may be accounted for by imperfect assimilation of food; this imperfect assimilation is especially present in typhoid fever owing to the intestinal lesions, and this accords with the fact that wasting is more pronounced in typhoid than in any other fever of an equal grade of severity.

Another very important point for consideration in the febrile process is the difference exhibited, after the application of external cold and heat, between the normal and febrile condition. Frequent repeated cold applications to a healthy man finally fail to reduce the temperature, whereas in fevers the hundredth repetition is as certainly followed by a diminution of bodily warmth as the first. On the other hand, the warm coverings to a fever patient increase the temperature, whilst in health the same extreme warmth fails to a great degree to cause elevation of thermometric registration. All of these conditions and phenomena, therefore, point out that the heat-regulating power is defective, and that in all probability the source or locality of the heat-producing activity of fever is not identical with that of health.

The correctness or otherwise of these views of the pathology of typhoid as well as of other fevers, is so important in the treatment that we shall give the author's statement of them in brief.

"The poison is swallowed and enters the system through the lymph follicles of the ileum, on which it produces its primary effects; it then passes into the mesenteric glands, where it goes through a stage of latency or incubation, and at last enters the circulation and produces the local lesions. The poison also acts on the heat-regulating centres and produces the febrile temperature. The high temperature in its turn causes all the other morbid phenomena. There can be little doubt but that the pathological changes and injurious effects of fever are largely due to the high temperature."

As the author very distinctly points out, although nearly all these phenomena may be ascribed to the effects of high temperature—the present German view of the febrile process—yet it can be distinctly shown that this opinion is too exclusive and contracted, and that it leaves out the factor originating the whole train of symptoms, viz., the action of febrile poison. It can be shown that the same kind of organic changes, though in a less degree, may result without the occurrence of fever.

Two other important features which are peculiar to typhoid receive considerable attention in the chapter on pathology, viz., the type and the duration of the fever. The type of typhoid, considered as a febrile process, is that of two distinct fevers: first, that due to the effect of the poison on the organism; secondly, that caused principally by the specific lesions of the intestine and the consequent septicæmia. The duration of typhoid is rendered extremely irregular, principally by the latter of these two phenomena. The initial fever is, the author believes, as regular in its course as that of most of the other zymotic fevers, although its duration is difficult of determination because, like some of the other fevers having a similar type, the secondary fever supervenes or overlaps on the primary, without the occurrence of a distinct remission. The duration of typhoid is rendered extremely varying by the secondary fever, in some cases it may be nearly or wholly absent; in others it becomes the main or at least the dangerous part of the disease.

Another cause of variation of duration is the striking tendency to relapses, which are apparently more frequent in typhoid than in other fevers. The author, after distinguishing between true and false relapses—between those

due to re-infection and those from improper diet, etc.,—believes that true relapses result from the absorption of the poison retained in the mesenteric glands and lymph follicles of the intestine—excluding of course such cases where it can be shown that the patient has been re-infected from his own discharges or poisoned water or food. This re-absorption, as the author says, probably takes place in all cases, but generally the system is protected and the zymotic process has been complete, therefore no relapse follows. Although this explanation has been rejected by many, we think it has been done on insufficient grounds. It is possible to maintain with certainty from post-mortem evidence that the follicles of the intestine, unsloughed, and even more surely the mesenteric glands, swollen to obstruction, retain portions of the zymotic material, which, as the glandular swelling subsides, must find its way into the circulation. If the amount of this material is large, a relapse results; if small, the "dose" of the retained poison fails to reproduce the febrile symptoms. Necessarily, if the active poison is retained in the glands, it must pass onwards into the blood, and its passage into the circulation must be sudden; if its amount is sufficient, a relapse is certain to follow. The suddenness of the onset of the fever in relapses, therefore, is in correspondence with the supposed anatomical basis of causation.

The third lecture, on the *Treatment*, is a plea to the profession for a return to the former philosophy in respect to fevers, viz., that something must be done to modify the febrile process itself. It is a claim put forward in behalf of some specific plan of treatment for fever, or rather the high temperature, in opposition to the expectant or rational method. The author calls it the antipyretic treatment of fever, which, as he shows, is not a new method, since it has been the aim from the time of Hippocrates to reduce the fever by various methods. But the specific plan which he recommends, it is claimed, is free from the objections that hold against bleeding, purging, sweating, emetics and calomel, all of which so evidently were harmful, so harmful that rational medicine by reaction adopted the expectant method as a protest against these errors. The antipyretic method, consisting of the application of cold, generally by means of baths, is itself by no means new, but the method was so much in conflict with prevailing notions that it was ignored. From the time of Dr. Currie until Dr. Brand, of Stettin, brought about its revival, this treatment has been used only occasionally, and indeed incompletely by a few eminent men, such as Chomel for typhoid, and Graves and Trousseau for scarlet fever.

The author applies two principles to the test of the success of this mode of treatment. First, whether it appears to relieve the urgent symptoms and to exercise a favourable influence on the course of the disease. Secondly, the test of statistics on the general rate of mortality. That the results of the test are favourable seems very evident, but to insure good results the principle underlying the treatment must be observed carefully throughout the whole course of the disease, and the temperature kept under a moderate fever heat (102.2° F.) from beginning to termination of the attack. This is to be effected by cold water applications, preferably the bath, supplemented by the use of drugs, as quinia, salicylate of soda, and digitalis. There exists an objection to the salicylate in that it is sometimes dangerously depressing on the action of the heart. The temperature of the bath may range from 65° to 70° F., its duration, varied according to the patient's condition and the effects produced, probably from ten to twenty minutes. It is to be repeated as often as the temperature rises to

the limit. Whilst exerting unquestionably a favourable influence on the general febrile symptoms, it does not affect unfavourably any of the special symptoms of typhoid, not excepting even the pneumonic and renal complications which occur with such frequency in the course of this fever. A plan of treatment which is shown to reduce the mortality from 16 per cent. to 7.4 per cent. (Brand), certainly has everything almost to recommend its further trial and adoption.

We regret that the author has not had something to say concerning the efforts to abort the onset of typhoid fever. After the reception of the poison into the system and the actual rise of temperature has taken place, almost all observers are agreed that prevention or cutting short of the disease is impossible, and that the means to such an end are useless, if not positively harmful. But during the incubation period there are many means to be employed in suspicious cases; not every dose of poison is fatal, neither should every drink of infected water develop typhoid fever. Few opportunities offer for careful observations during the time of incubation, but efforts should certainly be made in this direction in future. We regret that this subject should have been omitted by one so competent to deal with it.

It is impossible to criticize a book for omissions when the author does not attempt to make it full and complete. That a writer should not say anything new and original on the subject of typhoid fever is not strange, but as Dr. Cayley has brought together within so small a compass, so many well-attested observations of others, as well as many of his own, and withal so good a commentary of the whole, he has conferred a greater favour on his readers than if his theories had been newer and his propositions original and startling. Those readers, to whom the facts, here brought together, are known, as well as those who see them for the first time, cannot fail to read his pages with advantage and instruction, and will rarely find so much that is good or work so well done as in these lectures from his pen.

2. We welcome Dr. Irvine's pages now "reduced to order" by the author, from the contributions made to the *Medical Times and Gazette* during the year 1879. The subject of the relapses of typhoid fever, and the means by which they may be more certainly recognized, must be matter of very great interest to every physician. We are familiar with those cases of this disease, both severe and mild in character, which are described as dragging along with more or less return of fever after the expected time for convalescence. Such cases are variously and rather indefinitely spoken of commonly as cases of prolonged convalescences, as recrudescences, as unusual exacerbations or as relapses. To a great degree the true significance of such phenomena has commonly been very vague. Any contribution, therefore, to the clinical history and symptomatology of these conditions must be very welcome.

That true relapses with a return of all the symptoms—diarrhœa, fever, eruption, etc.—do occur, has been known with certainty for a considerable time, although still denied by some. We are much in need of further information of their pathology and of power and facility for their recognition. The author's endeavor is to supply us with a portion of this knowledge and to enable us to discriminate with accuracy between recrudescences of the primary attack and the irregularities and deviations of the disease on the one hand, and the true relapses, from which the special

danger of renewed ulceration of the bowel results, on the other. He claims also that relapses are much more frequent than heretofore supposed, and that too frequently they are passed by unrecognized.

The means which he discusses for the recognition of a true relapse is the thermometric record, while at the same time not claiming that such a recurrence of the disease is to be diagnosed by this means alone without a close conjunction of its indications with the symptoms. He points out that while a relapse has been defined as a "recurrence of the original attack, with all the phenomena of that attack," yet this is not an accurate definition, since the "relapse differs in many respects from the primary disease;" it bears, however, such a strong resemblance to the primary that we diagnose relapse through this resemblance—that we have a clear clinical notion of its nature without being able to form a strictly definite and accurate definition. He claims, moreover, that a true relapse may be distinguished from false relapses, and the true nature of the renewed disturbance established by the regularity of the temperature curve—that it is to be recognized by this means rather than from the eruption, stools, etc., which may not be typical either in the primary attack or the relapse.

A temperature-curve for the relapses of typhoid fever is as much to be desired and as valuable as a similar indication for the primary attack; a curve, regular in its irregularities and as typical for the one as the other, would be as striking an advance in our clinical knowledge as the original observations of Wunderlich, that each form or class of disease was characterized by a type of thermometric varieties of the bodily temperature. Wunderlich has given a few observations on the course of the temperature in relapses of this disease, but until now no systematic studies have been published. The author gives us the details of thirty-one cases, 19 of single or multiple, regular or irregular, relapses, and 11 of examples of recrudescence or of conditions likely to be confounded with relapse, and to these cases are appended twenty-one temperature charts.

The course of the temperature as shown by these records is generally as follows, subject, of course, to similar modifications and variations without known causes, as observed in the primary attack. After convalescence from the primary attack has commenced, and the temperature fallen to normal or even subnormal, a varying period elapses, and then suddenly and unexpectedly the temperature rises again. The apyrexial period in eight cases of "simple" single relapse varied from a few hours (only perceptible by the thermometer) to eight days, averaging a little over four days. From this the temperature, with little intermission, rises and reaches a maximum with striking regularity on the fifth day; up to the eighth or ninth day it is nearly steady, and then usually falls several degrees even to a subnormal grade; from this grade it usually rises, even quite high, but in simple cases this rise is, so to speak, ephemeral. After this the temperature shows in a modified degree the great oscillations of the terminal period of the primary attack. In the nine simple relapses of the author, all terminated within the twenty-first day by subnormal temperature.

The observations of others, as well as our own, in the main agree with this temperature record; Da Costa, who has, so far as we know, recorded the most extensive experience in the relapses of typhoid fever, speaks of its temperature peculiarities as follows. "Unlike the graduated ascending course until the evening of the fourth or fifth day, which is the rule in ordinary instances of typhoid fever, the temperature bounds within twenty-

four hours to a decided fever temperature, remits 1° to 1½° the next morning, and by the evening of the second day is a degree or more higher than on the first day, the thermometer very commonly marking 104°. Then for from five to seven days, according to the severity of the attack, the evening figures read about the same; and a morning remission of about 1°, or somewhat more, happens. Subsequently the temperature in a zigzag manner approaches to the normal, that we observe in typical cases of the typhoid attack. Yet, until convalescence is established, local complications arrest or reverse the daily descent. Neither do we always find during the height of the relapse, that the temperature is as regular as described. It may sink almost continuously for the first three days after it has reached the height occasioned by the returning fever, and then for three or four days more gradually ascend without any morning remission, yet subsequently, as defervescence sets in, show the characteristic zigzag decline alluded to." (*Trans. Coll. Physicians Phila.*, 3d s., vol. iii. pp. 105–6.)

In respect to the apyrexial period, observations and opinions are naturally indefinite; because, in the first place, not expecting a recurrence of the disease, the thermometric record, both at the end of the primary attack and at the commencement of the relapse, is not unfrequently omitted; and secondly, the standard for the termination of the primary attack is uncertain, some considering it ended by the occurrence of a subnormal temperature, others only when the symptoms have disappeared, although previously the thermometer has shown an absence of fever. The author's cases show an apyrexial period of, on an average, four days. Murchison speaks of ten to twelve days as a common interval, but refers to the relapse overlapping the primary attack without an appreciable apyrexia. Da Costa says, "the relapse generally comes on in the second or third week of assured convalescence, and in the second oftener than the third. It is not, I find—and in this the dissimilarity to the first attack is marked—preceded by the prodromic symptoms so common in typhoid fever."

It would seem, therefore, from the careful thermometric observations here alluded to, that the temperature curves of the relapse are, with variations, as typical for this condition as the curves for the primary typhoid attack, but that the time intervening between the primary and the relapse is not a characteristic feature.

The author's observations, he contends, go further than to show merely a typical course of the temperature for relapses. He claims that typhoid fever and cases of its relapse are much more frequent than at present believed; that through the absence of conspicuous symptoms, especially the diarrhœa, the primary attack remains unnoticed; and that the nature of the disease is first recognized, either from a greater severity of the symptoms or a long continuance of the illness, and only comes under treatment during its relapse. This relapse is to be distinguished and differentiated from a primary attack by the characteristic fluctuations and the duration of the fever as evidenced by the thermometric record. Such instances are furnished by "ambulatory" typhoid, in which, perhaps, relapses are especially frequent, although by no means confined to these cases. He further claims that relapses of the third and even fourth degree have hitherto been entirely overlooked, because unknown or wholly masked by the prominence of complications; these later relapses have their identity established by their own characteristic temperature curves, which differ but slightly in their prominent features from the early relapse, although there is a tendency exhibited in the later ones to a progressive shortening of the duration of the pyrexial period.

Other writers, however, speak of second and even third relapses. Murchison quotes Stewart, Trousseau, Wunderlich, and Maclagan as having observed these rare cases, and he mentions two cases occurring under his own care. Da Costa mentions a case where "this third attack (relapse) became much protracted by intense pulmonary congestion, and several violent intestinal hemorrhages happened after the sixty-sixth day of the original seizure" and ended by recovery. We have seen that, as yet, the basis for the recognition of the relapse is a very narrow one so far as it rests on thermometric observation. How much more scanty is our information in respect to second, third, and fourth relapses!

While it is essentially true, that, if a given train of symptom, with a characteristic temperature curve is present, it is difficult to come to any other conclusion than that, in this case, for example, we have to deal with a return of the disease or a relapse, still it must be carefully borne in mind that typhoid fever was not differentiated from other febrile diseases by its temperature (at that time thermometry was not studied), nor even by its symptoms, but its nature was first pointed out by its morbid changes studied in the post-mortem room. The same criterion must be made as well for all other diseases as for the relapses of typhoid fever. Supplied, however, as we now are with both the pathological appearances and the symptoms, the problem is a simpler one by far than the original discovery or elucidation of the disease, but still we are not at liberty to speak of a relapse of typhoid fever, much less of second, third, or fourth relapses, without in the first place being certain that our anatomical foundations are clear and distinct. As yet, the basis of the recognition of relapses, from a clinical point of view, is a very narrow one, and even more contracted is our knowledge of their anatomical changes.

The definition of relapse is an uncertain matter, and to make out of it anything more than a curious complication or, at most, a recurrence of the original symptoms, it is necessary to understand very definitely what is meant by a return of the disease. Do we mean a reinfection of the patient either, as some believe, by internal causes, or, as others hold, from external sources? Does the idea include also a redevelopment of the peculiar intestinal lesion in a new set of Peyer's patches, or is it only a new exhibition of the "ferment" changes of the blood, unattended with the peculiar danger from the ulceration of the bowel? According as we accept one or the other of these views, or, to state the question on its true basis, according as we find some anatomical foundation of their truth existing or none, necessarily our methods of treatment, as well as our efforts for the prevention of relapses, must be governed. To determine the question of the nature of the relapse, not so much its cause as its morbid changes, we must rely upon the appearances presented by the intestine. The author reports three cases of fatal relapse, and states in the *post-mortem* record "that Peyer's patches were affected as in ordinary cases of typhoid fever, and that there was nothing in the intestine to separate by morbid appearances relapse from primary attack." Dr. Murchison speaks of "lesions farther from the ileo-cæcal valve with healing of old ulcers lower down" as the conditions found in the cases observed by himself, and such were the appearances found by ourselves in the post-mortem of two cases in which relapse of typhoid fever had been diagnosticated. *A priori*, this is what we should be led to expect as the probable natural state in cases of relapse, but unquestionably a much larger number of cases than those as yet reported are required to furnish even the clue for the commencement of the study of the question.

We have attempted only to point out the course that the investigations should take in resolving with certainty this very interesting study, and have given very briefly a few of the points which the author has discussed in connection with the relapse of typhoid fever and its repetition. A criticism of the results of his labour, which extended over several years, on a subject as yet so new and so little explored, is manifestly out of the question. That the work of observation as given here by the author, in relation to the temperature attending the peculiar train of symptoms, has been well and faithfully done is apparent in every recorded case, and the spirit—the truly scientific spirit in which it has been accomplished, cannot be too highly praised. The settlement of the question and the reality claimed for the phenomena must be deferred until more materials are at our disposal.

A word further must be added in respect to the author personally. On the same page with his preface there is notice that Dr. Irvine died before his book was presented to the public. "It shows a true and earnest devotion to the profession which he had chosen,"—"the foreshadowing of what might have been, had longer life been granted to him who is no longer of us." M. L.

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ART. XL.—*Paralysie Vaso-motrice des Extrémités, ou Érythromélalgie.* Par MAURICE LANNOIS, Docteur en Médecine de la Faculté de Paris. 8vo. pp. 71. Paris: J. B. Baillière et Fils, 1880.

*Vaso-motor Paralysis of the Extremities, or Erythromelalgia.* By Dr. MAURICE LANNOIS.

IN this monograph of 71 pages we have a meritorious presentation of a little known subject. Vaso-motor paralysis of the extremities or erythromelalgia is the disease to which Dr. S. Weir Mitchell first drew general attention by an elaborate paper published in the *American Journal of the Medical Sciences* for July, 1878, although prior to this publication Graves, Grenier, Sigerson, and Vulpian had reported cases. Dr. Lannois uses freely the article of Dr. Mitchell, quoting in full his original cases and many of his observations, not failing, however, to give full credit. He gives in detail also one case observed by himself in the service of M. Straus.

The disease usually attacks men. It begins as a burning pain in some part of the foot or feet, as a rule, although the hands are sometimes attacked. The character and qualities of the pain are described. The most striking peculiarity, after the pain, is the flushing or congestion of the parts. The congestion is active and is accompanied by elevation of temperature. The pain and other symptoms are relieved by the horizontal position and by cold. Sensibility and the reflexes are usually preserved or increased. The muscles retain their volume, and respond well to electricity. Troubles of sight and hearing are occasionally observed.

Some of the affections from which erythromelalgia is to be diagnosticated are cyanosis from disease of the heart, acrodynia, ergotic gangrene, rheumatism, and podynia, but from none of these will the diagnosis be found difficult. In heart-disease we have the general cyanosis, the cardiac murmurs, the dyspnœa, and the œdema of the lower extremities to help us to a decision. Acrodynia was epidemic in France in 1828,

1829, and 1830, and since has occurred sporadically. Its chief manifestations, as given by Mitchell and Lannois, were vomiting, diarrhœa, œdema of the limbs, redness or splotches of the feet and hands, pain, burning sensation, dysæsthesia of the palms and soles, sometimes cramps, local spasms, and loss of power. Gangrene from ergot is usually symmetrical, and occurs in epidemic form among the lowest classes. Rheumatism may be difficult to differentiate from erythromelalgia when it is localized in the small articulations of the extremities. In making a diagnosis we are to be guided by the well-known course of rheumatism, and by the manner in which it yields to treatment. Podynia is a disease described by Gross as peculiar to tailors. It is characterized by an aching or burning pain in or about the soles of the feet. Gross believed it to be due to a subacute inflammation of the periosteum; but Mitchell ascribes it to a low grade of inflammation of the joint surfaces of the feet.

One of the most interesting parts of the pamphlet is that in which erythromelalgia and local asphyxia and symmetrical gangrene of the extremities are contrasted. The two diseases present exactly opposite characteristics, as is shown by the following table:—

| LOCAL ASPHYXIA AND SYMMETRICAL GANGRENE. | ERYTHROMELALGIA. |
|---|---|
| Women are attacked in four-fifths of the cases (M. Raynaud). | Nearly all the cases reported have been men (11 out of 14). |
| The least age is 25 years. | The least age is 35 years. |
| Ischæmia predominates; arterial pulsations are not present. | Turgescence and congestion are the rule; arterial pulsations are very violent. |
| The skin is livid and shows a characteristic cyanotic hue. | The skin is red or violet, the colour is always bright and animated. |
| There is always anæsthesia; sensibility is blunted notably, or may be even annihilated. | Sensibility is often normal; hyperæsthesia is sometimes observed. |
| The temperature is always below the normal. | The temperature is markedly increased at the time of the attack. |
| Gangrene is ordinarily the termination of the asphyxia. | As a general rule trophic troubles are not present. |
| The attacks are more frequently produced under the influence of cold. | The attacks are more frequently produced under the influence of heat. |
| The disease is symmetrical. | The disease may be asymmetrical, and when two members are stricken, one or the other is generally more affected. |

All the evidence, clinical and pathological, would seem to favour the view that in erythromelalgia we have a paresis or paralysis of peripheral vessels, and in local asphyxia and symmetrical gangrene peripheral vascular spasm. Thrombosis, embolism, or degeneration of the arterial walls sufficient to produce obstruction of the vessels, has not been found on dissection of the limbs in cases of symmetrical gangrene.

The following are the conclusions of M. Lannois:—

"1. There exists a *vaso-motor paralysis of the vessels of the extremities or erythromelalgia*, which should take its place in the nosology by the side of local asphyxia and symmetrical gangrene of the extremities described by M. Maurice Raynaud.

"2. This rare affection is characterized clinically by accessions of pain accompanied by swelling and redness of the skin, with notable elevation of temperature.

"3. The march of the disease is always slow, and its duration, always long,

is uncertain. It has periods of remission and exacerbation of its symptoms according to the seasons, winter diminishing the troubles, summer increasing them in a remarkable way.

"4. Its diagnosis does not present any very great difficulties, and it is probable that the affection will become more common when it is better known in its clinical manifestations.

"5. Its nature is still undetermined; it seems to be related either to disorders of the functions of the medullary vaso-motor centres, or rather to some modifications, still undetermined, undergone by the numerous peripheral ganglia which exist near the terminations of the nerves in the vessels and which preside in part over their innervation."

Although the monograph contains but little original matter, it deserves commendation as a careful systematic study of an important local vaso-motor disorder. C. K. M.

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ART. XLI.—*La Pellagra in Italia.* Annali di Agricoltura, No. 18, 1879. 8vo. pp. 502. Rome, 1880.

PELLAGRA, from *pelle*, skin, and *agra*, rough or harsh, may be denominated the national disease of Italy, as nearly 100,000 of her inhabitants are the subjects of it. It is not exclusively confined to Italy, as it is found to some extent in Spain, France, Poland, the Danubian Provinces, and Algeria; but it is far more abundant there than in any other country, and mainly in the northern provinces, there being very few cases south of Rome. On several occasions reports have been made upon it by the government, and the volume under our consideration is a census of the disease taken in all the provinces where it prevails.

It is one of the diseases of enervation, and results from poverty, ignorance, unwholesome diet, impure air, and bad water. An attempt has been made to trace its origin to the effect of a maize diet, but like the blindness of the Egyptians and orientals attributed to the use of rice, the opinion has failed from want of evidence. Indirectly, the diet of Indian corn, as prepared by the Italian peasantry, has much to do with the production of pellagra, but this is not due to any peculiar effect of the grain itself, or to any parasitic vegetable located upon it. Several varieties of maize are in use in Italy, and in some of the provinces where it is the chief diet the disease does not prevail. It is also prevalent in some localities where maize is but little used.

The habits of the Italian peasantry; their diet of corn-polenta, which is often sour and unfit to eat; their damp cabins; want of cleanliness; their winter residence in cow-stables; impure drinking water, and lives of toil and privation under an imperfectly sustaining diet, combine to produce a condition of system which favours the appearance of pellagra on exposure of the body to the influence of the sun's rays.

Pellagra is a singular disease, commencing in March or April as a solar erythema on the exposed parts of the body, it advances to a squamous stage, and late in the season disappears, to be renewed with increasing severity each spring. In time the dermal manifestation is overshadowed by its associated intestinal disorders which become the chief feature; then nerve troubles are superadded, the brain becomes affected, the patient shows signs of insanity, running on to melancholia with a suicidal propensity, and finally becomes, in the worst cases, paralyzed. Pellagrous

insanity abounds in the insane hospitals of northern Italy, and suicide, especially by drowning, is a common effect of the mental alienation. Although originating in poverty and privation, the disease may, by heredity, affect those of a better class in the next generation; to check such a national scourge is, therefore, a matter of vital importance to Italy, in which there were in 1879, 97,855 cases, in a total population of 26,801,154.

Under the name *Pellarella* the disease was treated in the well-known Ospedale Maggiore of Milan more than 300 years ago, and special arrangements were made (1578) for the admission of cases; but the malady was not minutely described until 1750, when Gaspar Casal, who had for twenty years observed it in the vicinity of Oviedo in Spain, did so under the name of *mal de rosa*. Although long known in Italy, it was not until 1771 that any one made it the subject of a monograph, which was the work of Francesco Frappoli of Milan, the disease in that year having been unusually prevalent. In 1784 a special pellagra hospital of 60 beds was opened in Milan, and at a later date the disease spread over a large part of Italy, even down to Naples, where ordinarily it does not exist.

More than 300 monographs on Pellagra have appeared during the last 130 years, chiefly in the Italian language, although perhaps the best and most comprehensive treatise is in the French tongue.[1] It has borne a score of titles, such as the *Alpine Scurvy; Mal de la teste; Mal del Miseria*, etc., and the government report under review gives a chronological catalogue of 285 of them.

The disease as stated is chiefly confined to the northern provinces of Italy, and is particularly abundant in what was before the union the *Lombardo-Venetian Kingdom*. It does not in ordinary times extend south of the former *States of the Church*, and does not exist in the two adjoining provinces of Siena and Grosseto, unless very exceptionally. It prevails to the largest extent in the four provinces of Brescia, Piacenza, Padua, and Ferrara, where there are more than 50 pellagrous subjects, male and female, to each 1000 of the agricultural population of 15 years of age and upward. In the provinces of Milan, Bergamo, and Venice, there are from 30 to 50; and Udine and Vicenza, 20 to 30. In times of great scarcity, the proportion increases; and when food is cheap from abundance, there is a marked diminution, as the very poor are able to obtain a better diet.

The object of preparing the Pellagra report of 1879 was to determine the causes of the disease, the measure of its prevalence, and, if possible, to devise means for checking or removing it. It is proposed to ameliorate the condition of the peasantry; for which purpose it is recommended that they should be instructed as to the causes of the disease, and induced to raise rabbits for animal food. They are to have better houses, with more light and air admitted; eat less corn food and more leguminous and vegetable articles; consume a portion of wine, milk, and meat; have their maize kiln-dried and kept free from moisture; avoid matrimonial alliances with pellagrous families; and as a last resort to emigrate.

It is not stated what country is recommended as a recipient for these pellagrous peasants, but in all probability, if the plan is carried out, we shall in time have a share of them in our own. Dr. Salvatore Caro, of New York, thinks that a change of region only is intended, but the term used implies simply emigration, and occurs in a number of tables as the

[1] Dictionnaire de Méd. et Chirurg. Pratiques, article *Pellagre*, by Henri Gintrac. 8vo. pp. 45. Paris, 1878.

final expedient. In the event of the failure, by amelioration, etc., emigration is to be the *dernier ressort*, as we understand it. In some of the paludal regions of Italy, miasmatic fevers, malacosteon, and pellagra are all prevalent; but the last appears to depend more upon an imperfect diet than paludal influence. Both malacosteon and pellagra are diseases of imperfect nutrition, but one may prevail without any appearance of the other. The Cæsarean section in Italy has been most abundant in the northern cities, but has also been performed for pelvic deformities in a large number of instances in the non-pellagrous districts, as for instance 27 times in Naples.

Dr. Caro, who has been in practice twenty-eight years in New York, writes to the reviewer to the effect that he has never met with a case of imported pellagra among his Italian patients. He has seen but one instance of the disease, and that began in this country under a syphilitic influence, and came under his care in 1878. As pellagra is inherited, it is possible that the syphilis in this instance attacked a subject already tainted with a dormant pellagra. No cases of the disease have been noticed in the inspection of emigrants at the New York quarantine during the past ten years. Dr. Piffard some years ago met with a case in the Hospital for Venereal Disease in New York, which he believes to have been pellagra. Dr. Duhring, of Philadelphia, has not seen a case outside of Italy.

The question of interest to the profession at large is, can pellagra be cured? Will an improved diet and mode of living remove the disease, or rob it of its severity? Would pellagrous Italians, if removed to the United States, be likely, with their early training and ignorance, to alter their mode of living sufficiently to escape the influences which have in Italy produced the disease? No doubt the reason for the non-arrival of pellagra in our country is that the subjects of it are too wretchedly poor to emigrate, or even to remove a short distance in search of a more healthful locality. Should the government aid them to emigrate, the question of climatic influence will soon be settled. Such subjects are not at all desirable unless they can be cured by coming among us and adopting our mode of living. If beyond remedy, they would be but little more acceptable than the Chinese leper. R. P. H.

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ART. XLII.—*A Treatise on Albuminuria.* By W. HOWSHIP DICKINSON, M.D. Cantab., Physician to St. George's Hospital; Senior Physician to the Hospital for Sick Children, etc. Second edition. 8vo. pp. 300. New York: William Wood & Co., 1881.

SINCE the first edition of this work (1868), which was reviewed in the number of this Journal for April, 1868 (p. 458), the reputation of Dr. Dickinson, as a skilful physician, and as a medical author, has very justly increased, and this work, as it has come to be more widely known, and as its teachings have been carefully tested by observation and further experience, has been more highly valued. A second edition has been demanded just as second editions of all good books are demanded, and also that the student might be informed of the later views and further observation of the author on many points in the pathology of albuminuria,

to which he has given diligent study, and to an increase of our knowledge of which he has contributed materially.

In the second edition Dr. Dickinson has inserted two additional chapters, one "On the Condition of the Heart and Arteries in Chronic Renal Disease (Chap. XIX.), the other "On the Retinal Changes Common to Albuminuria" (Chap. XV.); and besides this many alterations and restatements of his former teachings have been made which bring the doctrine of renal pathology, as found in his book, into accord with the recent advances, much of it the result of his own labour, and make the understanding of the subject much clearer. Several plates or figures have also been added, as well as illustrative cases of the disease, which serve to make clear and to enforce his later views. Dr. Dickinson has altered his nomenclature "at the bidding of the London Pathological Society," and has given up the name which he formerly used, viz., depurative for the so-called amyloid infiltration, and now calls it the lardaceous kidney.

It is our purpose only to speak of the new matter found in the second edition, as the views inculcated in the first edition have been very fully placed before the readers of the Journal. In the chapter on the changes in the heart and arteries which are so constantly found in cases of contracted kidney or other chronic renal disease, the author gives the various opinions which have been advanced to explain the hypertrophy of the left ventricle: First, Bright's view of the difficulty the blood experienced in traversing the general capillary system by reason of the impurity due to defective renal action; secondly, that the difficulty in the passage of the blood was not due to its altered quality, but merely to the resistance encountered in the diseased kidney, and points out the impossibility of maintaining either of these theories. He then speaks of the arterial changes, which had early been noted by Bright, and gives the views of Dr. George Johnson, who developed the theory that the changes in the heart and in the arteries were the results of a mutual antagonism, and especially insisted on the fact that the changes in the walls of vessels were a true hypertrophy of the muscular tissues; and then the observations of Gull and Sutton, who claim that the increase of the parietal bulk of the vessels is due to fibroid overgrowth, and is merely an associated condition with the fibrotic renal disease. They named the disease *arterio-capillary fibrosis*. This theory is diametrically opposed to the views of Dr. Johnson, who had previously denied not only that the granular kidney was due to an inter-tubular fibroid overgrowth, but that any fibrous inter-tubular tissue existed in the organ.[1]

Dr. Dickinson considers the question of the vascular alterations, under three heads: "First, their anatomical nature; secondly, the circumstances under which they occur; thirdly, the nature of the process, as far as can be fairly conjectured, by which the alterations are brought about."

He concludes that the affected vessels, generally the smaller arterioles, are often thickened in a sufficiently striking manner, and both the muscular and fibrous coats are involved. That the thickened muscular coat is also changed in texture; its nuclei shrink, lessen in number, and finally disappear, and fatty degeneration is frequent, and is early recognizable. The fibroid sheath he has seen to become wavy and thick, and finally swollen with translucent structureless exudation, which transforms the normally thin vesture into a bulky outer cylinder, equalling or surpassing the calibre

[1] Johnson's and Gull and Sutton's papers appeared in the Med.-Chir. Trans. for 1867 and 1872, respectively.

of the vessel. The muscular coat appears usually, though not always, to increase before the fibrous, and sometimes the former alone is increased. Dr. Dickinson also confirms the association, so constantly found, of the vascular changes, or at least the renal contraction, with hypertrophy of the left ventricle; his cases show a proportion of 74 per cent. in uncomplicated cases.

It is a strange fact that so opposite opinions, apparently well supported by observations, should have arisen concerning the condition of the vessels in renal disease, as well as to the cause of the simultaneous occurrence of the hypertrophy of the heart and the thickened vessels. The original view of Bright as to the cardiac hypertrophy, to whom the minute changes in the vessels were unknown, although he was familiar with their macroscopic alterations, was, for a long time, universally accepted; the changed quality of the blood, due to imperfect renal action, caused a hindrance in the passage of the blood through the capillaries, and to overcome this obstruction or retardation more forcible action of the left ventricle was necessitated; consequently its muscle hypertrophied.

Dr. Johnson's theory, that the antagonism of the vascular muscles is the cause of the cardiac hypertrophy, has not been sustained by other observers, and is probably directly opposed to their physiological action. We may therefore hold that this "stopcock" theory is improbable, especially as we do not find any other instance of a similar action on the part of the muscular coats of the arterioles, by which they act to prevent the entrance of blood into a diseased organ, because the organ is not in a condition to act functionally on the blood.

Dr. Dickinson, in his explanation of the cardio-vascular changes, reverts to the older theory of capillary hindrance due to the altered composition of the blood. He points out that the heart and arteries act in consonance in propelling the blood, that, through capillary hindrance, the vessels become overdistended and the blood-pressure within them increases, and that consequently both parts of the circulatory organs are stimulated to overaction; they possibly receive also a stimulating impulse from the irritative action of the contaminated blood. Habitual overaction is followed by hypertrophy. That the cardiac hypertrophy is not caused by the arterial thickening, but results, in common with it, from capillary obstruction, is, he thinks, shown by its development often before the corresponding changes in the arteries are distinguishable. He also cites the case of lardaceous disease in support of this view, where the arteries are much thickened, though not in the same way, and apparently as much obstructed, without the heart becoming hypertrophied.

The conclusions which he has arrived at, in respect to these points, are in brief as follows:—

The arterial thickening of renal disease is due to increase of muscle, together with degenerative and fibroid changes.

It is a true muscular hypertrophy of both heart and arteries, in consequence of the same hindrance in front of both; superadded to which there are changes in the vessel-walls due to increased pressure by the blood and the irritation by the morbid constituents.

The cardio-vascular thickening is almost invariable with the granular kidney; it occurs in other forms of nephritis and with degenerations or destruction of renal tissue, unconnected with general fibrosis.

Fibrosis, general or local, is not the direct acting cause of the cardio-vascular changes. The cardiac hypertrophy arises simultaneously or per-

haps prior to the vascular change, the cardiac is apparently not so much a consequence as of common origin with the vascular change. The cardio-vascular changes are consequent upon renal inefficiency, and are due to capillary resistance and arterial distension.

The usual exemption of lardaceous disease from the cardio-vascular complication may be due to a lesser degree of alteration of the blood, consequent on smaller amount of retained renal excreta, as witnessed by the small liability to uræmia which this disease involves, and partly to the relief of the arterial pressure afforded by the abundant purulent discharges so constantly associated.

Since the second edition of Dr. Dickinson's work has appeared, there was published in this Journal,[1] by Drs. Da Costa and Longstreth, some "Researches on the State of the Ganglionic Centres in Bright's Disease," in which the causation of the changes in the heart and arteries is discussed. In this paper were reviewed the observations of previous writers on the subject of cardio-vascular changes; and, while confirming the conditions which are so constantly found in cases of contracted kidney in respect to the circulatory organs, they propose, as the result of their studies of the changes in the glanglionic centres, an entirely new explanation of muscular hypertrophy found in the walls of the heart and arteries. Their theory points to the probability of the muscular hypertrophy being caused by the stimulating or irritating action of the altered blood—altered either by the retention of urinary products or by some unknown constituent, "poison," or materies morbi—acting on the nervous tissues, whereby an overaction of the vascular muscles is induced, and the consequent hypertrophy of these tissues. The simultaneous, or in some cases the antecedent, cardiac hypertrophy is due to a similar cause acting on the special cardiac ganglia.

This explanation of the undoubted hypertrophy occurring in both the heart-muscles and the muscular tunics of the vessels traces the cause to a central origin, and would seem to be much more in accord with known physiological laws than any view heretofore presented. This theory offers a much more rational explanation of the exceptional cases of diseased kidney, with or without vascular changes, in which the heart does not hypertrophy, and also covers entirely the ground for explaining the hypertrophy of the vascular muscles in all parts of the vascular system, as well as in the renal vessels.

The only material difference which Dr. Dickinson reports in the condition of the vessels from what has already been detailed by other observers, is the degenerative changes. Other investigators have also spoken of vascular degeneration in chronic Bright's disease, but it is usually as an occurrence of late origin. Dickinson, however, speaks of it as among the first changes to be found in the smaller arterioles. On this point we think he is in error, and so thoroughly in error, that, if his statement is true, it destroys in great degree his theory of the cardio-vascular changes. It is almost impossible to suppose that an hypertrophic and a degenerative process should take place in the same tissue simultaneously. The cases in which he particularly details these appearances, and on which he apparently basis his statement, are not, if we understand them correctly, simple instances of contracted kidney, and therefore cannot be fairly given to support the correctness of his observations.

[1] Amer. Journ. Med. Sci., July, 1880.

The paper to which we have called attention, as broaching this new explanation of the cardio-vascular changes, has been brought before the profession so recently that no opportunity has been afforded for other investigators to test the correctness of the researches on which the theory depends, viz., the essential character of the morbid alterations in the ganglia, and until this work has been many times repeated, no opinion can be definitely expressed on the soundness of the theory promulgated from these observations.

Chapter XV., which is also presented for the first time in this edition, is "On the Retinal Changes common to Albuminuria." The author points out the fact that the optical changes, at least those due to organic disease of the visual apparatus, are probably the direct results of the arterial changes so frequently accompanying albuminuria, and that they are to be found with as much regularity as the arterial disease itself. They are local alterations, which, from their peculiarity of situation, are readily seen, but are not isolated changes.

Before speaking of the anatomical changes in the retina, he alludes to the transient defect of vision due, like many other of the symptoms of Bright's disease, to uræmic poisoning, and shows that this condition is essentially different from the organic alterations, although it may arise as a complication or accompaniment of the more permanent and visible disease.

Of the organic changes he speaks of three kinds, which, while they may all be present simultaneously, usually make their appearance in the following sequence: first, hyperæmia and serous infiltration; second, hemorrhage; third, maculation.

The œdema or infiltration shows as a diffuse milkiness, rendering the outline of the disk indistinct. This condition is an early effect of the disease, and is apparently the result of increased vascular tension, belonging either to the acute or chronic form of malady. It produces a mistiness of vision, begins somewhat gradually, varies with condition of the circulation, is susceptible of improvement by treatment, and even of permanent recovery, providing the kidneys are not irretrievably damaged.

The nature of the pathological process productive of this condition is somewhat uncertain, and various opinions have been held in respect to its essential cause. The whole train of retinal phenomena are usually spoken of as albuminuric retinitis, thereby implying inflammatory origin of the changes; yet most observers describe its appearances as though simple increased vascularity and its accompanying serous transudation were the basis of the process. It is probable that in some cases a simple œdema is present, while in others an inflammatory exudation takes place; and that in many instances both conditions are presented, but as so few examples can be obtained for pathological investigation, since patients rarely succumb in this stage of the disease, the decision of the question must rest in abeyance.

The retinal hemorrhages, so frequently found in albuminuric retinitis, occur at all periods of the disease, except the earliest. They vary very greatly in number and size; they occur suddenly, and occasionally are large enough to produce darkening of the field of vision; they may be present in one or both eyes, but usually in both; they are usually seen near the site of vessels, or grouped around the disk, though not symmetrical in position or simultaneous in occurrence. The associations with the other retinal changes, when unexplained by other causes, are very characteris-

tic, if not pathognomonic of renal disease. They are produced by several causes, which may act separately or conjointly. The retinal hemorrhages of the early stage of disease are to be traced to increased arterial tension, while those of later occurrence, like the cerebral hemorrhages, are due to the advanced vascular degeneration, conjoined with greater force of the blood propelled by the thickened left ventricle.

The maculæ, or white spots, are usually white or cream-coloured, and strongly reflect light; they are placed in the anterior layer of the retina, and conceal beneath themselves portions of the retinal vessels, although also found involving the whole thickness of the retina; they are apparently areas of fatty degeneration of the retinal tissue. By some they have been considered as a degeneration of the decolorized clots. The microscopic examination of the eye post-mortem shows either collections of large granular cells or an increase of the connective tissue of the retina, and degenerative changes of the vessels, besides the œdema and the hemorrhages; but the nature of the white patches, whether of inflammatory or simple degenerative origin, or their relation to the extravasations of blood, has not been thoroughly determined.

The association of the retinal changes with the different varieties of Bright's disease presents most important aspects both in its clinical and in its purely pathological relations. In the first place, it may be stated that the retinal changes, except the simple hyperæmia and serous infiltration, are indicative of a chronic renal disease, and are associated very much more commonly with the contracted kidney, and are rarely entirely absent in this latter form of kidney, in at least one of its stages of development. On the other hand, it would seem from recorded experience that nearly every form of Bright's disease, both the tubal or catarrhal as well as those acute and often temporary cases of the disease seen in pregnant women and in scarlatina, which end in complete recovery, may exhibit retinal changes, although the instances are of rare occurrence. In cases of tubal disease, as they pass on to a chronic form, the retinal changes do occasionally make their appearance and become permanent, although this connection is exceptional rather than the rule. In lardaceous disease of the kidney, retinal changes have also been observed, just as in this form of albuminuria we find an occasional association of this infiltration with hypertrophied heart and arteries.

The author's concluding sentences of this chapter are as follows:—

"Retinal hemorrhage and maculation, which are but results of the cardio-vascular change, are distributed similarly to it. The evidence points with sureness to the conclusion that the retinal, like the arterial change, is not associated with any specific renal condition, but is the issue, direct or indirect, of the increased arterial tension, which loss of renal function in many shapes may entail."

It would seem best, therefore, since there is no positive pathological evidence—except, perhaps, the so frequent association, yet not constant, of the retinal changes with fibrotic kidney or interstitial nephritis—that the term "albuminuric retinitis," which implies an inflammatory origin of the disease, should be changed to "*albuminuric retina*," as this name would indicate merely its association with albuminuria, and that it was caused by the degenerative processes accompanying this group of diseases.

M. L.

ART. XLIII.—*Drainage for Health, or Easy Lessons in Sanitary Science.* By JOSEPH WILSON, M.D., Medical Director United States Navy. 8vo. pp. 68. Philadelphia: Presley Blakiston, 1881.

IN this thin octavo Dr. Wilson, who is so well and favourably known to the medical profession, by his excellent work on "Naval Hygiene," offers his services to the public generally as a guide to the popular mind in its avoidance of some of the dangers which so commonly threaten life and health. Its author announces in the preface that his intention is to furnish an essay, "simple in style and language, brief but correct as far as it goes, with sufficient variety to make easy reading." These objects are fairly kept in view, although in some parts of the volume Dr. Wilson seems to have a little over-shot his mark.

The first chapter is devoted to the drainage of land, and is well illustrated with numerous wood-cuts, showing the various forms and arrangements of drains, drain-pipes, etc., and instructing the reader in regard to numerous practical points, respecting the removal of the ground water from the upper strata of the soil. Chapter second treats of the drainage of the farmhouse and the village, and inculcates the vital importance to human health of pure water supply, and above all freedom from stercoral pollution. Drainage of cities is the subject of the third chapter, and is so clearly, though concisely, discussed as to render it the most valuable portion of the book. J. G. R.

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ART. XLIV.—*The Practitioner's Handbook of Treatment, or the Principles of Therapeutics.* By J. MILNER FOTHERGILL, M.D., F.R.C.P. Lond., etc. Second American from the second English edition, enlarged. 8vo. pp. 647. Philadelphia: Henry C. Lea's Son & Co., 1880.

THE scope and attractions of Fothergill's "Handbook of Practice" are so well understood by our readers that we need do scarcely more than notice this edition which has been recently issued. The happy combination in this work of medical philosophy and medical practice, presented in the author's fluent and engaging style, has met with general approbation: it is a book which we turn to with pleasure after vainly endeavouring to interest ourselves in the severely utilitarian and laconic treatises of many modern writers. The present edition bears evidence of careful revision, and much new material has been added which decidedly enhances its value. Among the new titles we notice Functional Disturbances of the Liver, the Means of Acting upon the Respiratory Nerve Centres, the Reflex Consequences of Ovarian Irritation, When Not to Give Iron, and Artificial Digestion—all important subjects. The section on the Nervous System, Chapter XXI., does not, in our opinion, entirely come within the general plan of the work, in its present form at least; although the section has been increased by one-third since the last edition, it might yet be extended with advantage. In the discussion of hysteria we do not observe its relationship to improper diet and "nervous" dyspepsia; in its therapy we miss the rest-cure of Weir Mitchell. Chorea might also be considered at greater length so as to include acute chorea occurring after zymotic

diseases or rheumatism in children, as well as that which appears in pregnancy; and the indications for treatment in chorea deserve more mention than they receive; while under epilepsy we fail to perceive a recognition of the value of ergot so well supported by Seguin. We mention these minor points not because we consider them vital, but because we like the book so well that we would have liked to have had it better. The second part of the work, on Public and Private Hygiene, and on Food in Health and Ill-Health, deserves to be thoroughly impressed upon the mind of both physician and patient, but particularly the former. Few practitioners will read it without acquiring some hints of value to them in their daily work.

F. W.

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ART. XLV.—*Visual Power and Colour Perception in Railroad Employés. Third Annual Report of the State Board of Health of Connecticut for the year ending Nov.* 30, 1880. Hartford, 1881.

As is well known, the Legislature of Connecticut at its last session passed a law requiring all railroad employés employed in running the trains to be examined in relation to their acuteness of vision and colour perception. The execution of this law was intrusted to the State Board of Health, and the present report contains the results of its operation—the first experience of the kind in this country.

Two standards of requirements were adopted: one for the first class—composed of engineers, firemen, and brakemen; and one for the second class—including all other employés. For the first, healthy eyes with normal acuteness of vision ($\frac{20}{xx}$) and entire freedom from colour-blindness were required; for the second, visual acuteness of at least $\frac{2}{3}$ in one eye and of $\frac{1}{2}$ in the other, and freedom from colour-blindness in one eye and colour perception of at least $\frac{3}{4}$ in the other eye. Holmgren's worsted tests for colour-blindness were used, and Donders' quantitative tests with reflected spots and transmitted light.

The violent opposition with which the attempted execution of the law met from the railroad men and their friends, and the hue and cry that was at once raised by the politicians and the newspapers, are familiar matters of history. They demanded an entire change in the methods of examination, and clamoured particularly for practical tests by flags and lanterns. In obedience to this popular "pressure," the following modifications in the rules were made: brakemen were transferred to the second class; the standard of visual acuteness was reduced to $\frac{2}{3}$; and those failing in colour perception by the worsted test were allowed to be further tested by flags and lanterns at a distance of 80 rods.

1950 men were examined, of whom 68 were found colour-blind, and 196 with defective vision. 29 were absolutely refused certificates, 9 left voluntarily, some special certificates were granted at the option of the board, and in a number of cases the occupations of the men were changed. Brakemen found deficient were transferred from the front to the middle of the train, where hearing is more important to them than sight. Some interesting practical points were developed by the examinations. Of 43 men who failed by Holmgren's test, and were re-examined, 40 failed also by the flags and lanterns, and only three guessed correctly; and complaints and appeals against the flag and lantern test have been as numerous and

as bitter as against the "fanciful and theoretical tests" of the scientific examinations.

As a plain matter of fact it will not be possible to devise a test which will meet with the approval of those who fail to pass it, and the Connecticut Railroad commissioners, who are entirely correct on this question, truly say, that "had the result proved that there was no necessity for the law, no complaint would have been heard, for universally the men who have passed the examinations say that no man who cannot pass them is fit to run a train." Even if the flag and lantern test were practicable, without great loss of time, where a large number of men are to be examined, it has been shown to be entirely unreliable, particularly when applied by unprofessional persons. Dr. Carmalt gives a striking illustration of this fact; when he showed his orders to the President of the New Haven and Northampton Railroad, which runs into Massachusetts, he was crustily informed that the law was a nonsensical one, that the Massachusetts commissioners had attended to the matter, the employés had been examined under their instructions (by the assistant superintendent), and there was not a colour-blind man on the road. Dr. Carmalt, however, found a much larger percentage of colour-blind on that road than on any other—7 per cent., or nearly double the average. Dr. Carmalt states that, in all his examinations, he found only one man colour-blind of the first class (engineers and firemen), over thirty-two years of age, the average being thirty-one, while the average age of their class is thirty-six, and that "these men are actually eliminated from the service before they reach the average age of their class by a further experimentation with the lives of the passengers and the property of the company."

So little attention has hitherto been given to the subject, that it is not easy to point out instances in which accidents have certainly resulted from colour-blindness, but a striking case has recently been brought to light. A collision occurred, several years ago, between the tug-boat Lumberman and the steamer Isaac Bell, near Norfolk, in which ten lives were lost. The coroner's inquest developed no definite result; but it was supposed that one of the pilots was drunk. The pilot of the Lumberman was recently examined by a marine hospital surgeon and found to be colour-blind, and it is reported that the other pilot has the same defect. In the investigation of the famous Norwalk draw-bridge accident, it was shown that the red signal was properly displayed, but disregarded.

To the unprejudiced and unpolitical observer it would seem that the *raison d'être* of this Connecticut law had been more than established by its brief history. Unfortunately, some of the statesmen at Hartford appear to take a different view of the question, and are bringing all their energy and eloquence to bear for its repeal. Both sides have recently been heard before a Railroad Committee of the House, who have reported the following bill: "The railroad superintendent, the superintendent of motive power, and a surgeon approved by the Railroad Commissioners, shall be a board to examine railroad employés." But it is feared that even this is likely to be defeated in the Senate.

Dr. Jeffries is now perseveringly "agitating" the Massachusetts Assembly with a view to obtain legislative action in reference to examinations for colour-blindness among railroad employés and navigators.

G. C. H.

ART. XLVI.—*How a Person threatened or afflicted with Bright's Disease ought to live.* By JOSEPH F. EDWARDS, M.D. 12mo. pp. 87. Philadelphia: Presley Blakiston, 1881.

THE little book before us calls for but brief notice. Its pages are intended especially for the patient's, rather than the physician's, reading. The author has divided his remarks into four parts: the first part is devoted to "General Remarks" on Bright's Disease, intended to show its relative frequency at present and in former times; part second is on the physiology of the kidneys; part third, the nature of Bright's disease; and the last or fourth part, containing the chief object of the book, is devoted to the "Rules of Life."

It has been said that no task is more difficult than to write a book for children, and next to such an undertaking comes writing a scientific book for unscientific readers. Children are too often furnished with reading matter, which they do not want, but which their elders think they should have; writers on science supply their readers with the half-truths or inaccuracies of knowledge greatly to the detriment of intelligent progress. The failures in writing books of a so-called "popular" nature, or having for their purpose the instruction of the public, are due generally to this fault, and we are sorry to have to note in the first three parts of this book many errors of this sort. We think that these inaccuracies must have been made through carelessness or from the too common feeling that anything in science is "good enough for the public," because, in the last part, on the matters which concern the readers, and of which they are supposed to be judges, no fault is to be found.

Of the "Rules of Life," the professional reader can but praise them very highly; the author's facts are clearly given, his opinions are accurately reasoned out, and very plainly and forcibly expressed. Medical writers on Bright's Disease would do well to take instruction from this part of the book, and borrow a chapter for their future publications. Too frequently this portion of the discussion of this disease, as well as of most others, is passed over with only casual allusion, whilst it is, as our author shows, of the highest importance to the well-being of our patients, and in comparison with which drugging is of but little value.

We are prepared to praise the author's work in respect to the principal object for which it was undertaken, viz., how to live in Bright's disease, but we claim that no one should come before the public with any facts of a scientific character which are not strictly accurate, and which are not fully substantiated; all unsettled and debatable questions can be, from the nature of such books, easily omitted. If the next book, which the lay reader takes up, contains a different statement, or if the statistical tables prove an opposite proposition, doubts at once arise, not only of both these books, but of all other scientific results; not only are the purely scientific matters discredited, but the portions intended for the public's instruction or direction fail to produce the desired results. Such, we fear, may happen with parts of this book.

Should the brochure go to another edition, and we hope that it may, we trust that in the revision the author's attention will be given in the direction indicated. M. L.

ART. XLVII.—*Diagrams of the Nerves of the Human Body.* By WILLIAM HENRY FLOWER, F.R.S. Third edition. 4to. Plates vi. Philadelphia: Presley Blakiston, 1881.

The first edition of this work, issued in 1860, was a large folio, and its merits as a means of study were speedily recognized. The second edition of 1872 and the present are so reduced in size and therefore in price that they may be had by every one. As the American reprint has been out of the market for some two years, and will not be reissued, we commend the present edition most fully to the profession. Both doctor and student will find the plates invaluable in refreshing their memories on many points so easily forgotten, and yet so important to recall. Professor Flower has done great service to teaching not only by the original plates, but by the more convenient and cheaper later editions. W. W. K.

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ART. XLVIII.—*On the Operative Treatment of Hare-lip.* By W. J. WHEELER, M.D., M. Ch. Univ. Dubl. 8vo. pp. 40. Illustrated by 14 chromo-lithographs. Dublin, 1880.

THIS brochure, a reprint from the *Dublin Journal of Medical Science*, contains the records of fourteen cases of hare-lip, of various degrees of complexity, operated upon by the author; as well as a short account of the development of the jaw. The illustrations of the instruments employed and of the patients before and after operation are very realistic; the latter are chromo-lithographs. It seems to the writer, however, that at the short time after operation that these were drawn there should be more appearance of scarring than is seen. The author describes one case of median fissure, which is, of course, a rare occurrence. He prefers the scissors to the bistoury in paring the edges, uses compressors to control the coronary arteries, and, as a rule, operates within three months after birth. When there exists a projecting intermaxillary bone it should, in his opinion, be bent into place, and perhaps secured by an interosseous suture. The reporting of the cases is, in many instances, too verbose, the literary style of the author not above criticism, and the generalizations too limited; nevertheless, the work is a contribution to the literature of the deformity that will interest many surgeons. J. B. R.

# QUARTERLY SUMMARY

OF THE

# IMPROVEMENTS AND DISCOVERIES

IN THE

# MEDICAL SCIENCES.

## ANATOMY AND PHYSIOLOGY.

### *Elasticity of Arteries.*

The elasticity of the arteries, though it is well known to exert a powerful influence on the circulation of the blood, has hardly been studied with the attention it deserves. Ed. Weber was the first to institute the ingenious comparison between the elasticity of the arteries and that of the air in the air-chamber of a fire-engine, and to show clearly that its principal action is to convert the intermittent flow caused by the rhythmical contractions of the heart into a comparatively uniform and continuous current; but few have occupied themselves with determining with precision the degree of elasticity in particular vessels, the extent to which they yield on pressure, and their resistance to rupture. Moens, indeed, found that the elasticity was equal in the longitudinal and transverse directions, and that its co-efficient increased with the weighting. Volkmann observed that the carotid of a sheep sustained without rupturing a pressure of 2.25 metres of mercury, which is about fourteen times greater than that of the ordinary blood-pressure. All experimenters agree that the elasticity of the arteries is very perfect, though small; that is, that whilst they are easily extended or compressed according to the mode in which the force is applied, they recover their original form very perfectly.

Dr. Roy has just made an important communication to the subject in the pages of the last number of Michael Foster's *Archives of Physiology*. He states that he entered upon the consideration of the elasticity of the arteries with the view only of determining by direct experiment the relation that exists between the intra-arterial pressure and the cubic capacity of any given portion of artery; but as he continued to work at the subject new points arose, the examination and discussion of which have led to the publication of the present memoir. In the first place, he finds, with Wertheim, that whilst inorganic substances, such as metal wires or glass rod, extend in proportion to the weighting—at all events within certain limits,—in the case of moist animal tissues the increments in length produced by the addition of successively increasing weights diminish gradually in proportion to the weights employed. Dr. Roy next proceeded to investigate whether the thermo-elastic properties of animal tissues were identical with those of inorganic substances. Now, with one or two exceptions, all bodies on being compressed become warmer, and on being stretched cooler. But the animal

tissues agree with the exceptions to the rule—to wit, bismuth and caoutchouc—in becoming warm when stretched, whilst their temperature falls on being relaxed.

On examining by experiment the relation between the internal pressure and the cubic capacity of the arteries, Dr. ROY found that the aortic walls are most elastic at pressures corresponding more or less exactly to the normal blood-pressure, and no difference can be detected in the degree of elasticity between the time of death of the animal and the period when putrefaction has commenced. The elastic properties of the arteries taken from different animals, even of the same species, may vary considerably, and still greater differences result from malnutrition, such as that produced by febrile processes. But in a functional point of view it may be said that the elastic properties of the aorta and large arteries of any given animal are identical, so that the ratio of increase of volume to increase of pressure is the same in the aorta and its branches. Dr. ROY in subsequent sections discusses the effects of disease and of age on the elasticity of the arteries, and demonstrates by diagrams the considerable modifications that are produced by diseases affecting the general nutrition, and the fact that the elasticity is perfect only in childhood. The whole paper is a valuable contribution to our knowledge of this subject.—*Lancet*, Feb. 19, 1881.

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*On Elongation of the Sciatic Nerve.*

In a communication to the Société de Biologie (*Gaz. Méd.*, February 5), Prof. BROWN-SÉQUARD furnishes an account of some experiments which he has made on the influence that elongation of the sciatic nerve exerts on the sensibility of limbs rendered anæsthetic by lateral hemisection of the spinal cord. Guinea-pigs, rabbits, and a dog were employed, and in almost all of them the anæsthesia disappeared, and was even replaced by more or less hyperæsthesia of the limb which had lost its sensibility. In the dog very remarkable effects were produced. The transverse section of the right lateral half of the cord, opposite the tenth dorsal vertebra, had produced paralysis and hyperæsthesia of the right posterior limb, and a very considerable degree of anæsthesia of the left posterior limb. Almost immediately after the elongation of the left sciatic nerve to at least a centimetre and a half (which was scarcely felt), sensibility reappeared in the left paw, increased rapidly, and in less than half an hour this paw became much more sensible than the fore-paws, in which the sensibility was normal. The hyperæsthesia gradually increased, and the next day it was very considerable, and almost equalled the degree of hyperæsthesia of the right limb, which had nevertheless increased. At the same time there was a very notable degree of paralysis of the left hinder limb—that of which the sciatic nerve had been elongated. The same experiment was tried in eleven guinea-pigs, and in nine of them there was a more or less rapid return of sensibility in the anæsthetic limb; and in almost all of the animals hyperæsthesia appeared in the limb that had been anæsthetic. Two of the eleven guinea-pigs did not recover the sensibility which they had lost. Voluntary motion was very notably diminished in all these animals, being almost completely lost in three of them, two of these having also exhibited very considerable hyperæsthesia. Of three rabbits upon which the same experiment was performed, in one only did a considerable return of sensibility take place. All of them had paralysis of the limb, the nerve of which had been elongated. The results of these experiments are as follows: 1. An almost immediate or more or less rapid return of sensibility in a limb in which the hemisection of the cord had caused anæsthesia—the anæsthesia being replaced by hyperæsthesia in a good number of the animals. 2. In almost all the animals

submitted to hemisection of the dorsal cord, the hyperæsthesia caused by this lesion in the posterior limb of the corresponding side is increased after the elongation of the sciatic of the other limb. 3. In all the animals there was a more or less marked and persistent paralysis of the posterior limb in which the elongation took place, and there was also an elevation of temperature in that limb. 4. Not only do the parts supplied by the sciatic recover their sensibility after its elongation, but the same change is observed in parts not animated by it.

Prof. Brown-Séquard also divided the right lateral half of the cord opposite the third cervical vertebra in a guinea-pig. After having verified the existence of hyperæsthesia in the right limbs, and very marked anæsthesia in the left ones, he elongated the left sciatic. Shortly afterwards, not only the leg, but the arm of the left side became hyperæsthetic. The irritation of the sciatic, therefore, changed the properties of the cord throughout its length. In several guinea-pigs, also, in which the cord remained intact, the elongation was followed by hyperæsthesia and paralysis, but in a far less degree than when the cord had been first divided.—*Med. Times and Gazette*, Feb. 26, 1881.

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## MATERIA MEDICA AND THERAPEUTICS.

### *On the Action of Chloroform, Ether, and Ethidene.*

The Scientific Grants Committee of the British Medical Association have made an elaborate study of the action of these anæsthetics (*British Med. Journal*, Dec. 18, 1880), and offer the following conclusions:—

A. *Clinical.*—1. The dose (administered on a towel) is greater with ethidene than chloroform; but the time necessary to anæsthetize the patient is longer with the latter than the former agent.

2. The number of cases of sickness and vomiting is about the same with the two agents, but the duration is considerably protracted in the case of chloroform; the occurrence of these symptoms have no relation to the length of time the patient has been under, or reference to the quantity of anæsthetic administered in a given time.

3. With both agents, the pulse-respiration ratio is considerably altered in a certain number of cases, the pulse falling as the respirations increase in frequency. With chloroform, this change is not only much more marked, but its occurrence is also more frequent than with ethidene; the proportion, in our experience, being nine of the former to two of the latter. There is also a greater tendency in cases of chloroform to retardation of the heart's movements, and to dicrotism.

B. *Physiological.*—1. The effect of anæsthesia with chloroform is to increase the amount of carbonic acid exhaled in a given time. The results of our investigations, in connection with the effects of anæsthetics on the gases of the blood, are not sufficiently reliable to permit us to give results.

2. Both chloroform and ethidene, administered to animals, have a decided effect in reducing the blood-pressure; while ether has no appreciable effect of this kind.

3. Chloroform reduces the pressure much more rapidly, and to a greater extent, than ethidene.

4. Chloroform has sometimes an unexpected and apparently capricious effect on the heart's action, the pressure being reduced with great rapidity almost to *nil*, while the pulsations are greatly retarded, or even stopped. The occurrence of these sudden and unlooked-for effects on the heart's action seems to be a source of serious danger to life—all the more that, in two instances, they occurred more

than a minute after chloroform had ceased to be administered, and after the recovery of the blood-pressure.

5. Ethidene reduces the blood-pressure by regular gradations, and not, so far as observed, by these sudden and unexpected depressions.

6. Chloroform may cause death in dogs either by primarily paralyzing the heart or the respiration. The variations in this respect seem to depend to some extent on individual peculiarities of the animals; in some the cardiac centres are more readily affected, in others the respiratory. But peculiarities in the condition of the same animal very probably have some effect in determining the vulnerability of these two centres respectively; and they may both fail simultaneously.

7. In most cases, respiration stops before the heart's action; but there was one instance in which respiration continued while the heart had stopped, and only failed a considerable number of seconds after the heart had resumed.

8. The use of artificial respiration was very effective in restoring animals in danger of dying from the influence of chloroform. In one instance, its prolonged use produced recovery even when the heart had ceased beating for a considerable time.

9. Under the use of ethidene, there was on no single occasion an absolute cessation either of the heart's action or of respiration, although they were sometimes very much reduced. It can, therefore, be said that, though not free from danger on the side of the heart and respiration, this agent is in a very high degree safer than chloroform.

10. In regard to the effect of anæsthetics upon the pulmonary circulation, as in the experiments on the effects of the anæsthetics upon the blood-pressure, it may be stated that chloroform produces the most immediate effect, ether the least, whilst ethidene occupies an intermediate position.

11. The quantity of air, and the length of time required to restore the circulation in the lung, are in an inverse ratio to the amount of anæsthetic vapour, and time necessary to stop it.

12. The changes produced in the lung are the same in all; the only difference being in the rapidity of their occurrence.

13. The anæsthetics produce the following changes in the lungs—(1) retardation and ultimate stoppage of the circulation in the lung: first in the capillaries, then in the arterioles, and subsequently in the larger vessels; (2) the epithelium-cells of the meshes and their nuclei are no longer apparent; (3) the capillaries contract slightly, and their walls become less distinct, or even disappear from view, and the inclosed corpuscles may become more or less disintegrated.

14. The effect of ether and ethidene upon the heart, after artificial respiration for seven and five minutes respectively, is simply to produce a retardation of the impulses—ethidene having the most marked effect. Chloroform not only produces a retardation of the pulse, but the ventricular contractions are delayed and slightly separated from the auricular, and an auricular contraction may immediately follow the ventricular. The auricular contractions frequently occur without any corresponding ventricular movements.

The conclusions to be drawn from the above observations are these:—

C. *Practical.*—1. It is not only necessary to watch the effect of the anæsthetic upon the pulse, but it is also requisite to have regard to the respiration. We must not only take into account the danger of sudden stoppage of the respiration, but must also remember that, in the event of abnormal increase of respiratory movements, it may become essential, for the safety of the patient, to temporarily discontinue the administration.

2. Owing to the tendency of chloroform and ethidene—particularly chloroform—to reduce the blood-pressure suddenly, not only during the administration of

these agents, *but also after they have been stopped for some little time* (a source of serious danger), it is necessary for the person who has charge of the administration of the drug to be on the lookout for symptoms of this occurrence, both during the time the agent is being given, and for some time after the patient has recovered from its more evident effects.

3. The danger of death, from stoppage of the respiratory functions, must be borne in mind in every case in which anæsthetics are given; but, of perhaps greater importance is the danger from interference with the proper action of the heart—particularly when it is remembered that, by artificial means, we can combat the former contingency. It might even be advisable, in certain cases, to introduce a tracheal-tube by the mouth—so as to enable us to force air into the lungs by means similar to those adopted in experiments with animals; or, in circumstances where such a procedure was impracticable, tracheotomy might be performed, with the same object in view. Artificial respiration should be continued, even though all evidence of cardiac action has ceased.

4. As regards comparative danger, the three anæsthetics may be arranged in the following order: chloroform, ethidene, ether; and the ease with which the vital functions can be restored may be conversely stated, thus: the circulation is more easily re-established when its cessation is due to ether than to ethidene; and when the result of ethidene, than when chloroform has been used. The advantages which chloroform possesses over ether—in being more agreeable to the patient and more rapid in its action, in the complete insensibility produced by it, and the absence of excitement or movements during the operation—are more than counterbalanced by its additional dangers.

5. The chief dangers are: (1) sudden stoppage of the heart; (2) reduction of the blood-pressure; (3) alteration of the pulse-respiration ratio; and (4) sudden cessation of the respiration. The danger with ether approaches from the pulmonary rather than from the cardiac side—so that, by establishing artificial respiration, we have a means of warding off death. Its disadvantages are, to a great extent, obviated by the use of ethidene; whilst the dangers of chloroform are also reduced to a minimum.

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*Effect of Chloral-hydrate on Certain Forms of Artificial Diabetes.*

Eckhard (*Arch. für Exper. Pathol.*, Band xii.) confirms the statement of Mering and Musculus, that the urine of chloralized animals does not contain any sugar. In order to see whether the diabetic puncture was effectual in chloralized rabbits, the author subcutaneously injected into the animals a gramme (on the average) of chloral-hydrate, and very frequently, after two or three hours, another dose of a quarter of a gramme. The narcosis after this was deep, and lasted five or six hours. The urine passed three or four hours after the puncture was collected, evaporated, and the fermentation-test was applied to the watery extract of the residue, always with a negative result. Even after severe injury of the vermiform process, diabetes was absent in chloralized rabbits, and in the majority of the experiments no noteworthy increase of the urine occurred. In two converse experiments, the author noticed the following results. After the vermiform process had been divided in the healthy rabbit, the urine showed itself strongly impregnated with sugar in the course of one hour. If the author injected subcutaneously one gramme of chloral-hydrate, the urine of the next hour still contained sugar, but not that of the second, third, and fourth hours. In a third series of experiments, the author endeavoured to decide whether the chloral-narcosis does also not prevent the diabetes caused by reflex action. For this purpose the author irritated, in rabbits, one of whose vagus nerves on the neck had

been cut, the central end of the same at intervals of from three to five minutes, each time for two minutes; in a normal animal, diabetes occurred after one hour's irritation; in chloralized animals, however, the urine did not contain any sugar, even after irritation, for several hours. In a dog, however, the urine of which was free from sugar after five grammes of chloral-hydrate, the inhalation of carbonic oxide produced distinct diabetes. In one patient with diabetes, the quantity of sugar in the urine decreased considerably after the use of chloral, whilst in another patient there was only a considerable diminution in the quantity of urine.

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## MEDICINE.

### *Pilocarpin in Diphtheria.*

Dr. GEORGE GUTTMAN, of Cronstadt, writes, in the *Berl. Klin. Woch.:* Knowledge of the physiological action of pilocarpin and of its effects upon bronchial catarrh, giving rise to moist *râles*, led me to believe that, administered in diphtheria, it might loosen the diphtheritic membrane through the induced abundant salivary secretion, while it would not excite any inflammatory condition. The result of the proposed treatment was, above all expectation, brilliant and striking. In April, 1879, an entire family of seven fell sick, one after another, with diphtheria; three exhibited the severest typhoid symptoms. The second case I treated with pilocarpin in moderate doses. The next day I found a copious salivation, and fragments of pseudo-membrane floated in the expectorated matters. Pilocarpin was administered also to the other five patients. In addition, the usual general treatment was followed; quinine, tannin locally, gargles of lime-water and pepsin. The patients recovered in from two to four days. Since these first cases, down to August 1880, sixty-six cases of diphtheria (*rachenbräune*) have come under my care; fifteen exhibited the worst of the diphtheritic symptoms, of which, according to my previous experience, at least two-thirds would have certainly died; thirty-three would be termed bad cases, the membrane being extensive, the remainder were slightly affected. I gave pilocarpin to all; only in the first cases, quinine and gargles also; they recovered, as a rule, in periods of time varying from twenty-four hours to three days; of the fifteen worst cases, two recovered in nine and eleven days, the rest in two to five days. All patients who came early under treatment, while the pseudo-membrane was still loosely adherent, without exception were cured within twenty-four hours. The doubt that these cases were not truly diphtheritic is not to be raised, since they were examined with the utmost care, and in the worst cases the contagion could be distinctly traced. Under the action of the pilocarpin, not only were the membrane and infiltration dissolved in the salivary flow, but also the violent inflammatory condition yielded to its influence, the deeply reddened, dry, mucous membrane soon became moist, pale red, and in every respect of normal appearance. Led by these results, I prescribed pilocarpin in violent pharyngeal cases, angina aphthosa and tonsillaris, always with most happy results, the disease yielding in a short time. In two cases of violent tonsillitis, in which the tonsils were so swollen that water could be taken only with great difficulty, and scarification was positively indicated, not only did the swelling disappear, but the entire group of inflammatory symptoms, the one in twenty-four hours and the other in thirty-six. In the few cases of membranous croup that have fallen into my hands during the past fifteen months, pilocarpin has proved a faithful ally, and I believe it will prove as effective as in diphtheria of the fauces. Two cases of laryngitis stridula yielded promptly to the same drug, which is safer and more

convenient than the usually prescribed emetic. Others have used pilocarpin under my advice, and agree with me in maintaining its excellence in diseases of the nature described. In the administration of this remedy I combine pepsin to combat the gastric catarrh usually present. My formula is as follows: ℞ Pilocarpini muriat. gr. ½-¾; pepsinæ, gr. j-1½; acidi hydrochlor. gtt. ij; aquæ dest. ℥iiss. M. Sig. A teaspoonful hourly for children. For adults—Pilocarpini muriat. gr. ss–j; pepsinæ, gr. xxx; acidi hydrochlor. gtt. iij; aquæ dest. ℥viij. S. Hourly, a tablespoonful. I have never observed any undesirable effects of the drug even when it has been continued until complete recovery, possibly because I give a small amount of generous wine after each dose.—*London Med. Record*, Feb. 15, 1881.

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*The Constitutional Symptoms which occur during the Prodromal Period of Syphilis.*

The following is a *résumé* of M. Mauriac's views on this subject, as set forth in a lecture published in Nos. 31, 32, and 34 of the *Lyon Médical*, 1880. There is never any constitutional disturbance before the appearance of the chancre. The interval between the chancre and the manifestation of constitutional disturbance ought to be called secondary, or constitutional, or syphilitic incubation, to distinguish it from the period of incubation which intervenes between contagion and the appearance of the initial lesion. The duration of this secondary incubation varies considerably. In a large number of cases where the disease was left to itself, the author found that it ranged between forty-five and sixty days. The appearance of general symptoms may be influenced in various ways. 1. *Specifics.*—The influence of these has been exaggerated. Often, in spite of mercury having been given from the first appearance of the chancre, the period of incubation is not delayed. 2. *Season.*—The stages of syphilis are shorter, and succeed each other more quickly in hot than in cold climates; but in our own climate the variations of temperature are too feeble to exercise much influence in this respect, except in unusually severe seasons. 3. *Intercurrent Maladies.*—Fevers and inflammations are those which most manifestly prolong the incubation of syphilis.

The following are the prodromata of secondary syphilis: *a*, syphilitic fever; *b*, pain of various kinds, *i. e.*, nocturnal headache, neuralgia, muscular pains, osteocopic pains, arthralgia, pleurodynia, lumbago, etc.; *c*, encephalic troubles; *d*, cardio-pulmonary disturbances; *e*, disturbance of nutrition, with or without asthenia of the functions of the sympathetic nervous system. All these prodromata occur much more frequently in women than in men. In most men, syphilis produces its first effects without disturbing the general health. In women, slight headache, malaise, and sweating are the most usual prodromata. The constitutional troubles generally cease when the exanthem appears, but sometimes they persist during the secondary stage, and may even cause a state of cachexia. In most cases the prodromal symptoms have no special gravity, and disappear spontaneously, or under specific treatment. They are of no value as regards prognosis; sometimes a mild course of syphilis is preceded by severe general disturbance, while a grave or even malignant form of the disease may occur when there has been no marked physical or functional disturbance at the outset.

*Syphilitic Fever.*—The frequency of this has probably been exaggerated. In most patients it is exceptional or very slight. It is infinitely more common in women than in men. Syphilitic fever never occurs during the first week of the chancre, but only when the general intoxication reveals itself; this is usually about eight to fifteen days before the appearance of the rash. The fever is generally intermittent, rarely continued. The attacks occur at irregular intervals, and are

often incomplete. Sometimes the fever comes on abruptly; sometimes it is preceded for a few days by general malaise, headache, etc. The *intermittent form* consists of a series of fits, which come on almost always towards evening, and in this respect resemble hectic much more than ague. Each fit lasts eight or ten hours, is followed by a period of complete apyrexia, and the attack does not return with the almost mathematical regularity of malarial ague; very frequently one stage may be absent. Violent shivering is very rare; much more usually there are repeated slight shivering fits, which precede the fever by some hours. The hot stage is much more constant than the cold stage. The sweating stage is very rarely absent; indeed, in some cases it is so prominent a feature that it seems to constitute the whole fit, and may last all the night. Intermittent syphilitic fever is nearly always quotidian, but the author has seen the tertian variety, and gives a case of this form. One most remarkable character of syphilitic fever is its slight influence on the general health. The tongue often remains clean and moist, and the appetite unimpaired. M. Mauriac has never observed boulimia or polydipsia in men. The spleen is not usually affected, but if it be slightly enlarged, never to the extent observed in malarial fever. The *remittent form* of syphilitic fever is less common than the preceding, but, like it, lasts a week or a fortnight. The fever never completely ceases. The exacerbations have no regularity; they occur sometimes in the morning, sometimes in the evening; and are generally more incomplete and irregular in their stages than the intermittent form. The remission is always longer than the attack. This form is more serious than the intermittent, and affects the general functions more severely. There are nearly always violent headache, general malaise, etc., and sometimes insomnia and asthenia, of a typhoid character. The digestion, however, is often normal. A third form of syphilitic fever has been described by some authors, but it is really only a mixture of the two preceding forms.—*London Med. Record*, February 15, 1881.

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### *Pilocarpine in Bromidrosis.*

M. ARMANIGAUD, associate professor of the Faculty of Medicine in Bordeaux, read a paper on the employment of hypodermic injections of nitrate of pilocarpine in cases of fetid perspiration of the feet. The following are his conclusions:—

"Certainly the preceding facts are not sufficiently numerous for us to affirm that we have in pilocarpine a sure and certain means of curing fetid perspiration of the feet. I will even add that I have observed in regard to pilocarpine when employed in intermittent fever such contradictory results that I have been brought to distrust a little the therapeutic action of pilocarpine (even when a perfectly identical result is in question). I believe however that I may draw the following conclusions from the preceding facts, which if they were not definitive, will be able to serve at least for the basis of new researches.

"1. Repeated hypodermic injections of nitrate of pilocarpine appear to have a curative action in fetid perspiration of the feet.

"2. Suppression of perspiration of the feet obtained by the use of this substance, even when it has taken place suddenly, does not appear to have any disastrous effect on the organization.

"3. Is this action definitive or simply temporary? This will be proved by the continued supervision of my three patients, and whatever may be the result I shall hasten to make it known.

"4. In this case pilocarpine acts by producing a derivative and substitutive hypersecretion in the salivary glands, and the sudorific action, which is obtained more surely and more completely with jaborandi than with pilocarpine, does not

seem capable of being substituted advantageously in this sialagogue action of pilocarpine.

"It would be interesting to ascertain whether the result which gives rise, probably by its decomposition, to the fetidity of morbid perspiration of the feet, no longer set free by the palmar and lateral surface of the toes, and of the sole of the feet, would not be eliminated by the salivation thus produced. But we, first of all, must know with certainty the cause which gives rise to this repulsive odour, and we are far from being decided on this point.

"However, we ought to value highly the opinion of M. Charles Robin, who, having proved that this morbid sweat contains leucine, attributes the fetidity to the decomposition of this substance, and to the formation of valeriate of ammonia. I purpose, therefore, in the new observations that I shall make on this subject, to collect saliva and to investigate the presence of leucine."—*L' Union Médicale*, Jan. 27, 1881.

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*Treatment of Cerebral Hemorrhage by Subcutaneous Injections of Ergotine.*

Dr. Foster, encouraged by numerous successes obtained in the treatment of hemorrhages in general by injections of ergotine, conceived the idea of trying this method in cases of cerebral apoplexy. He employed it in the cases of three patients whose diagnosis admitted of no doubt, and who could not reap any benefit from internal medication as deglutition was impossible.

Dr. Foster saw the first of these patients about an hour after the onset of the symptoms. One injection of ergotine was sufficient to dissipate the coma, whereas the methods employed previously had had no result. On the other hand, having been called to the second patient immediately after the attack, he was able to prove that the injection of ergotine sensibly weakened the intensity of the coma. Ergotine, as we know, arrests hemorrhages by promoting the contraction of the arterioles; it is therefore reasonable to employ it when the hemorrhagic effusion is produced in the midst of the cerebral substance. But, in order that the action of the drug may prove efficacious, the attack should be a recent one.—*Bulletin Gén. de Thérapeutique*, Nov. 30, 1880, from *Journal Medico-Chirurgical de Pesth*, No. 8, 1879.

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*Nitrite of Amyl in Epilepsy.*

Dr. Maragliano (*Note di Clinica Medica*, Genoa, 1880) determined to try whether nitrite of amyl would so modify the cerebral circulation as to have a permanent effect in diminishing the fits of epilepsy. In inhaling the medicine, he used a bag of caoutchouc containing some cotton-wool, which was applied to the nostrils while the patient was allowed to inspire air through the mouth. The dose given was much higher than that used by other physicians. Beginning at 10 drops, he gradually mounted to 40, and he continued the inhalation as long as fifteen minutes without any instances in which harm was observed. Where the epileptic attacks were numerous, the inhalations were repeated once every hour Dr. Maragliano quotes the experiments of Schüler, who found that, in rabbits in which an opening had been made in the skull, from five to three inhalations caused a dilatation of the venous and arterial vessels of the pia mater. The smaller arteries began to pulsate, and some of them to assume serpentine curves. The brain expanded and bulged out of the trepanned hole. He notices the denial of Vulpian that nitrite of amyl has any congestive action on the brain, but finds from his own observation that the temperature of the head is increased by the action of this drug. In like manner he rejects the negative observations of Loemisch, Stammeshaus, and Pick for those of Aldridge, Tebaldi, and Grade-

nigo, who hold that the vessels of the retina are dilated after the use of inhalations of amyl. Ladendorf found that the temperature of the mouth was raised by half a degree C. during an inhalation. That this drug impedes the oxidation of the blood is universally admitted. He found that, out of thirty cases after inhalation of amyl, sugar appeared in the urine in twenty-four, and was totally absent in six. All traces of the sugar passed away entirely after three to six days. This appearance of sugar is supposed to be owing to the dilatation of the hepatic vessels. He admits that there are cases in which amyl is of no use in epilepsy, it promises most in those patients in whom the face becomes pale. Dr. Maragliano considers that the power this drug has in dilating the vessels of the brain (*la sua azione iperemizzante sul cervello*) is the cause of its therapeutic value in epilepsy.

Dr. Maragliano has made some very careful observations to ascertain the direct effect of the inspired nitrite of amyl upon the blood. He found that neither the size of the globules nor their number was affected by this drug.

The author sums up as follows:—

1. That the inhalation of nitrite of amyl methodically and persistently, and not with the view of cutting short impending attacks, causes a notable diminution of the violence and number of the epileptic seizures. This is proved by the three observations described, as well as several others in which the results were identical. The method employed by us is different from what is habitually followed, which was to cause the amyl to be inhaled after the beginning of the attack or after the aura came on in order to avert the fits. Hammond has tried the drug in much the same manner as ourselves without being able to report any benefit; but we using larger doses have obtained favourable results from the use of amyl. Some other observers have also reaped benefit, among them is Crichton-Browne, who however did not use the drug in the same fashion. He succeeded in eight cases out of ten in cutting short the status epilepticus in which fits succeeded one another without intermission, the patients remaining unconscious during the intervals.

2. That the dose of the nitrite of amyl may be raised without inconvenience to forty drops—the inhalations being prolonged for forty minutes and repeated from four to six times a day.

3. That the cerebral temperature is gradually raised from .3 to .8 of a degree C. during inhalation of the nitrite, on the cessation of which it again descends to the usual grade.

4. That the inhalation of nitrite of amyl in most instances causes the appearance of sugar in the urine amounting to from 1 to 2½ grammes in the twenty-four hours.—*Brain*, Jan. 1881.

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### *Nerve-extension in Locomotor Ataxy.*

In the *Progrès Médical*, 1880, No. 50, Dr. BLONDEAU gives the following account of the recent successful performance of this operation:—

"At the end of one of his clinical conferences, Prof. Charcot presented a patient who excited the highest interest. This patient, from the service of Dr. Debove, of Bicêtre, is the subject of locomotor ataxy, upon whom the elongation of the left sciatic nerve has been practised with the view of relieving him of the incessant and atrocious shooting (*fulgurants*) pains from which he has long suffered. He is also the first patient upon whom this operation has been attempted in France.

"The elongation of the nerves in the subjects of ataxy is an operation of quite a recent date, and it is in Germany that it took its origin. The surgeons of that country, who for some years past have already treated various forms of neuralgia

by elongation, and reckon a certain amount of success from the procedure, have probably been led to employ it in ataxy under the idea that the shooting pains may be regarded as a neuralgia arising from organic spinal lesion. However this may be, they have had recourse to this operation in three cases of ataxy, and have obtained either a cure or a notable amelioration. In the first case, due to Langenbeck, the two sciatic nerves were elongated, and then the two femoral, with the results of a disappearance of the pains and a cessation of motor incoördination. In the second case—that of Esmarch—the results were yet more brilliant; for, as a consequence of the elongation of the nerves in the axilla for the relief of the pains in the forearm, the motor incoördination entirely disappeared. In the third case (Erlenmeyer's) the result was not so satisfactory. The two sciatic nerves were successively elongated; but there followed only some slight increase in the strength of the patient, no change occurring in the disturbed sensibility or the motor incoördination.

"The results of these cases induced M. Debove to make a trial of the same means in a case in his service. The subject operated upon was an ataxic who had reached a very advanced stage of the disease, and who had kept the bed for eighteen months. The symptoms which he presented were as follows: violent shooting pains of an exceptional intensity, occupying the upper as well as the lower limbs, and preventing sleep. He never passed twenty-four hours without these pains manifesting themselves, injections of morphia having been employed for their relief until the dose of sixteen centigrammes was reached. Gastric, urethral, and vesical crises occurred about every eight days; and there was motor incoördination, which was limited to the lower extremities, the patient being quite unable to maintain himself erect, and sinking down upon himself when the attempt was made to make him walk by supporting him under the arms. There was an absence of tendon reflex on both sides. Very marked myosis of the two pupils existed, but was unoccupied by any disturbance of vision. Cutaneous sensibility was diminished, but there were no patches of anæsthesia. The notion of the position of the lower extremities was lost. Dr. Gilette, on November 18, laid bare the left (chosen because the pains were most violent on that side) sciatic nerve at the middle of the posterior part of the thigh, and seizing it with his fingers, elongated it twice suddenly and violently. Antiseptic dressing was then applied. Chloroform was not employed, because physiological experiments have shown that when a nerve is violently pinched there is a momentary arrest of the respiration and circulation; and it was feared that any such arrest might prove dangerous to a subject under chloroform. In spite of this, the operation was not very painful, which may be attributed to the influence of the morphia with which the patient was saturated. He himself declared that he did not suffer a hundredth part of what he suffered during his crises. The results obtained are most remarkable. The shooting pains have quite ceased, and the muscular incoördination has almost disappeared, the tendon reflex, however, is still absent, and the pupillary myosis continues. These results, Prof. Charcot, as is his custom, rendered visible and palpable to his auditors. The patient was brought in on a litter, and, as requested, raised one or other of his limbs alternately. Prof. Charcot having placed his hand about sixty centimetres above the patient, the latter, almost without hesitation, touched it several times with the point of his foot. Two assistants supported the patient in the erect posture, and he was able to maintain this without oscillating, and even to make a few steps.

"What has been the mode of action under these circumstances? Has the spinal centre or the nervous system been acted upon? At present this is not known, and, as Prof. Charcot observes, it is of little consequence. What we should realize is the fact that elongation—if the results thus far obtained are

confirmed—is an operation destined to render the unfortunate subjects of ataxy invaluable services. But we should guard ourselves against unreflecting enthusiasm, and not, basing our procedures on these successful cases, perform elongation in all examples of the disease. This would be to carry our aim too far, and it is necessary that we should act with prudence and scientifically, operating only when real indications are present."

Reporting on this case at a later period (*Progrès Méd.*, No. 52), and referring to another case also occurring in Dr. Debove's practice, Dr. D'Olier says:—

"We have seen this week at Bicêtre the patient whom Prof. Charcot exhibited to his class at Salpêtrière. This man, who for years past had suffered horrible pains in his lower extremities, scarcely attenuated by large doses of morphia, has not felt since the elongation—that is, for about a month—the slightest shooting pains either in the lower or upper extremities, and the gastric disturbances from which he suffered have entirely disappeared. Moreover, the motor incoördination has almost entirely disappeared on both sides.

"On December 16, Dr. Debove, in accord with Dr. Gilette, made another trial upon a subject of ataxy, who, encouraged by the cure of his comrade in misery, demanded an operation for himself, he being the victim of incessant shooting pains, with exacerbation, and affecting both upper extremities. Dr. Gilette having laid bare the right radial and median nerves, passed a sound beneath them with its convex side towards the nerves. Then the instrument being held by its two ends, tractions were made perpendicularly to the axis of the nerve with sufficient force to raise the latter five or six centimetres. With respect to these tractions it may be observed that there is no fear of rupturing the nerve during their employment. Some experiments made on the dead body have shown that a force of forty-two kilograms is necessary to rupture the radial, the tractions made on the living subject being far below this figure. In this patient, as in the other, the shooting pains have considerably diminished in the right upper extremity, and have disappeared in the left extremity and in the lower limbs. The plantar anæsthesia has much diminished on the left side, and motor coördination has been much improved. Walking without support has become possible. The patient has recovered regular sleep, and refuses the aid of morphia, declaring that his pains are nothing to those which he endured before.

"The result of these two operations is sufficiently remarkable to be carefully noted. If the procedure is only a palliative, which, according to all probability, does not arrest the progress of the ataxy, these two examples prove at least its efficacy against two of the important symptoms of the disease—pain and disturbances in motor power, and perhaps also those of sensibility."—*Med. Times and Gazette*, Jan. 22, 1881.

Langenbuch and Esmarch have described two cases of tabes treated by nerve-stretching. The idea was to relieve the patients of their acute pains; and not only did the result justify the keenest hopes entertained on that score, but, to the astonishment of all concerned, the ataxy itself was greatly reduced by the operation. ERLENMEYER discusses these cases and their various bearings, and contributes another instance of nerve-stretching in an advanced case of tabes. The patient had passed through the period of shooting-pains, and had entered upon the third, or paralytical, stage of the disease. The ataxia was excessive, the muscular sense absolutely lost, the bladder paralyzed. The most energetic treatment, including anti-syphilitic courses, had failed to effect any improvement. On June 22, 1880, the right sciatic nerve was exposed by means of an incision over the sciatic notches (Erlenmeyer considers it advisable to operate as near the centres as possible). Lister's method was followed, and the wound healed by first intention. On July 3, the left sciatic was stretched. At this time the right

leg had distinctly gained in strength, but the ataxy was not notably diminished. The healing of the wound on the left side gave some trouble, on account of some erysipelatous complications. On the 16th of August, the patient could stand alone against a wall, which was previously impossible, and may be considered as a proof of a gain of strength. The ataxy remains much the same; but the remnants of the shooting-pains, which atmospheric vicissitudes always aroused, have disappeared.

The comparative failure in his case is attributed by Dr. Erlenmeyer to the insufficient force exerted in stretching the nerves. But this method of treatment in locomotor ataxy, especially at an early stage, ought to be put to the test in a systematic manner. If possible the amount of traction necessary to produce the beneficial effects should be determined objectively by means of weights, or some other means of measurement.—*Brain*, Jan. 1881, from *Centralblatt für Nervenheilkunde*, No. 21, 1880.

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*On Tendon-Reflex.*

An interesting paper has been written by Dr. H. Senator on the physiological relations of the phenomenon known as tendon-reflex. A sharp blow on the tendon of the patella, when the legs are crossed, will cause the leg to be raised by the sudden contraction of the quadriceps extensor femoris, and a movement of the feet can be induced by a similar blow applied to the tendo Achillis. Tschirjew has shown that in the rabbit the centre for the reflex act in the patellar-reflex is situated between the fifth and sixth lumbar vertebræ, the afferent fibres proceeding from the tendon, and not, as Joffroy maintained, from the skin. These fibres run in the crural nerve, the division of which puts an end to the phenomenon. Senator corroborates Tschirjew's statement that division of the spinal cord opposite the fifth or sixth lumbar vertebra abolishes patellar tendon-reflex. He finds, further, that division of one lateral half of the spinal cord at this level abolishes the reflex on the corresponding side only. There is, therefore, no decussation of the nerve fibres. Division of the lateral column on one side produces the same effect. Division of the posterior cornua of the gray substance does not abolish the tendon-reflex. He concludes that in this part of the lumbar region both the sensory and motor fibres of the posterior extremities are exclusively contained in the lateral columns of the cord. It is remarkable that the patellar tendon-reflex can only be induced by one kind of stimulation—namely, mechanical shock or sudden extension by a blow. Neither electric, chemical, nor thermic stimuli have any effect. Nor has such stimulation as can be applied by pricking, cutting, or pressure. Senator discusses the views of Tschirjew in regard to its presence in health and disease, and appears to think that it is not always demonstrable in health, and not always absent in ataxy.—*Lancet*, Feb. 12, 1881.

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*Suppuration of an Enlarged Thyroid.*

Spontaneous suppuration of a goitre is one of the least common terminations. An instance in which this occurred during the course of an attack of typhoid fever has lately been recorded by M. Weill, from Jaccoud's wards. The patient was a man, aged twenty-two, who had a goitre of moderate size and firm consistence. He had lived until within four months in a district where goitre is endemic. The attack of typhoid fever ran a normal and mild course. The day after the temperature had become natural, he complained of severe pain in the neck, and the surface of the goitre was observed to be reddened. During the next day the redness and size of the goitre increased, and its consistence diminished, until distinct fluctuation was perceptible. A week later it was incised, and a large quantity

of pus escaped. A drainage-tube was applied, and the cavity washed out daily with carbolic acid. It gradually lessened in size, and was ultimately reduced to two or three small nodules by the side of the larynx.—*Lancet*, Jan. 29, 1881.

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*Treatment of Exophthalmic Goitre by Subcutaneous Injections of Duboisia.*

M. E. DESNOS, in an interesting paper on this subject (*Bulletin Gén. de Thérapeutique*, Jan. 30, 1881), concludes that the neutral sulphate of duboisia, administered in subcutaneous injections of one milligramme ($\frac{1}{65}$ grain) or a half milligramme to the dose, according to the tolerance of the patient, can produce good effects in cases of exophthalmic goitre; its employment is harmless, and accidents may be easily arrested by diminishing the injected dose. Whatever may be the duration of the disease, the improvement is the same; but we must be prepared for the fact that, if in the beginning all the symptoms improve, this improvement may not always continue. The medication, if persisted in longer, might be able perhaps to give better results; which can be ascertained only by observations pursued still further.

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*Pneumothorax.*

In the *Berl. Klin. Wochenschrift*, No. 52, 1880, is a short account of an address by Dr. SENATOR, giving the results of his experience as to the course and treatment of pneumothorax. 1. The pleural exudation appearing in pneumothorax is, he finds, more frequently serous than is generally supposed. 2. Frequently in unilateral pneumothorax double pleurisy appears. 3. If the pneumothorax, as is generally the case, is caused by pulmonary disease, the resulting exudation suffers decomposition extremely seldom, provided naturally that the diseased lung had not already gone on to decomposition, as, for example, in gangrene. The cause of this rare occurrence of decomposition seems to be the cellular spongy construction of the lung enabling it to act as a filter; also, the large amount of carbonic acid in the air of the lung. 4. That the air entering the pleura from the lung is comparatively harmless, more especially when compared with the air entering through a wound of the thoracic wall, is shown by the occurrence, even if rare, of cases where no exudation follows a rupture of the lung. 5. That pneumothorax may take place through decomposition of an exudation in a closed pleura, Dr. Senator considers not at all impossible. 6. As to treatment, Dr. Senator considers puncture of the air quite a useless, if a harmless, procedure, and recommends at first the use of injections of morphia. Later, if exudation have taken place, the absorption of the air should be awaited. When this has happened, or should there be pressing necessity, puncture, and should this show decomposition, make an incision at once. Should it show a serous exudation, aspirate cautiously. He would puncture and aspirate in cases of pus in the pleura with a diseased lung. Professor von Langenbeck, in the discussion on Dr. Senator's address, stated that in his experience the exudation from shot-wounds and crushing of the thorax (hæmopneumothorax) as a rule decomposed, and that very quickly. That a pneumothorax might occur from the decomposition of an exudation in a closed pleura he could quite believe, from cases of hydrocele and inflammation of the knee-joint, where gas had formed, under his own observation.—*London Med. Record*, Feb. 15, 1881.

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*The Treatment of Empyema.*

Professor KÖNIG, of Göttingen, who is one of the editors of the *Centralblatt für Chirurgie*, contributes to No. 48, 1880, of this periodical, an article "On the Treatment of Empyema," which, though composed in the somewhat dogmatic

style that is characteristic of the writings of many Germans, is not by any means devoid of interest. He claims to speak with an authority derived from a large experience, and he lays down the law very definitely in comparing repeated puncture with free incision: "It must, on the one hand, be declared inadmissible," says he, "for any one, after the evacuation of a putrid effusion, to proceed further in attempting disinfection through the puncture made by the trocar; and, on the other hand, we hold that repeated puncture always involves a risk to the life and health of the patient, even although we allow that here and there a case may recover as the result of such a line of treatment. *Das heiszt nach unserer Auffassung Hazard gespielt.*" He considers the following as two absolute indications: 1. Putrefaction of the contents of the pleura makes a free incision imperative. 2. If the contents of the pleura be unmistakably purulent, they should also be evacuated by means of free incision and drainage. The following sentence we transcribe in full: "When I first entered upon the discussion of the treatment of empyema by incision, I had at my disposal only a scanty supply of statistics bearing upon the results of the operation. It is not so now; the observation of a large number of patients enables me to point to the incision of pleural abscesses as one of the most blessed results of Lister's method of treatment. For, in the hands of any one who has mastered only in some degree the principles of antiseptic surgery, this way of dealing with a simple empyema is absolutely certain to lead quickly to a successful result. The temperature falls immediately on the evacuation of the pus, the patient recovers his appetite and his weight begins to increase, and after the period of from three to six weeks which elapse before the opening has healed he is completely cured, his lung having regained its function, no permanent deformity of the chest in most cases remaining. Of course this does not apply to old fistulous cases, in which the lung is displaced and degenerate; but even in these the antiseptic treatment, though no doubt difficult of application, is of enormous benefit. But this procedure in a case of simple empyema is not only absolutely certain; it is, in our opinion, absolutely free from danger. And, moreover, the one danger which formerly we were obliged to allow as being present, has now quite disappeared, since we recognize the fact that to wash out the pleura with a solution of carbolic acid is absolutely unnecessary. Since the occasion when a child, the patient of a friend and colleague of ours, died of acute poisoning after the pleura had been washed out with a solution of carbolic acid, we have constantly endeavoured to banish this procedure from our practice; and we are quite in agreement with Goschel, who says that most cases of empyema do not, as a rule, require it. But if it become necessary, or if it be necessary at the time of the operation, because the pus is really putrid or suspected of being so, a solution of chloride of zinc (one to thirty, or one to fifteen), which is absolutely innocuous, should be employed." This may perhaps strike the reader as possibly painted somewhat *couleur de rose:* one would like to see a little more definite statement as to the cases Professor König has treated, and of the actual proportion who recover completely in from three to six weeks. The assertion with regard to such strong solutions of chloride of zinc is also rather startling. Still, we are able to bear out in great measure the truth of what he says. We cannot agree that any method of treating an empyema is absolutely free from danger. We saw not long ago a patient almost asphyxiated after the incision in the chest had been made—partly as a result of the secretion of mucus from the bronchial tubes, owing to the administration of ether; partly owing to the fact that the opening of the pleura rendered the lung on the affected side completely *hors de combat;* and partly because a small amount of pus was coughed up at the time. We only mention this in order to show that the generalizations of Professor König

are perhaps a little too comprehensive. It will be interesting to English surgeons to know that Professor König adopts as a routine practice the plan of cutting out a piece of the rib; he makes his first incision on to the rib, separates the periosteum, and removes a portion half to three-quarters of an inch long, the object being to avoid the nipping of the drainage-tube, which is often so troublesome. He has abandoned the plan of making the opening in one of the lower spaces behind, choosing now generally the fifth or sixth rib near the latissimus dorsi (we suppose, the border of the muscle). He only makes the double opening in those cases where thorough and repeated washing out of the cavity is necessary. It is also interesting to see that while he makes his drainage-tube as thick as the finger, he does not use one longer than the little finger; the extensive coils of tubing which we have often seen coaxed, at the expense of considerable trouble, into the pleural cavity have, it must be confessed, always seemed not only useless, but absolutely pernicious.—*Med. Times and Gazette*, Jan. 29, 1881.

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*Pulmonary Syphilis.*

In a recent article on syphilis of the lung (*Giornale Italiano delle Mal. Ven. e della Pelle*, August, 1880), Professor GAMBERINI relates the following cases which came under his observation, and which he considered to be instances of early syphilitic disease of the lung. Case 1.—A man, aged 32, of healthy antecedents, contracted a hard sore on the prepuce, which was followed by papular angina. The symptoms yielded to mercury. Four months afterwards, difficulty of breathing came on, and soon became so severe that he returned to Gamberini's clinic for relief. On examination, the left side of the chest moved less freely than the right. There was also a localized patch of dulness between the third and fifth ribs on the left side of the chest, with deficient respiratory murmur. The remainder of the chest was normal. There was enlargement of the inguinal, axillary, and cervical glands. Dyspnœa and general malaise were complained of, but there was little or no cough, nor expectoration, and no fever. Under the administration of iodide of sodium gradually increased to 3 grammes (45 grains) daily, all signs of the lung affection disappeared in forty days. Case 2.—A man, aged 27, of previous good health, and with no family history of tubercle, came under treatment for pain at the lower part of the chest, cough and expectoration, with fever. He had at the same time an indurated cicatrix on the frænum, and multiple glands in the groins. A few days afterwards, a lenticular syphilide and erythema of the fauces appeared. The chest was well formed, but the right side moved less freely than the left during respiration. In front, percussion showed no difference between the two sides, but behind, on the right side, there was diminished local resonance in the supra-spinous and infra-scapular regions, with deficiency of the respiratory murmur in those situations. In front, on the right side, inspiration was interrupted, and weaker than on the left, and coarse crepitating *râles* could be heard. The spleen was slightly enlarged. The other viscera were normal. Mercury was given by the mouth, and also by subcutaneous injection, for about three weeks, and subsequently iodide of sodium. The patient recovered in a month. The temperature in this case never exceeded 101.4° Fahr. The expectoration was at first yellowish-white, then became rusty and tenacious; subsequently it was mucous in character, and finally ceased altogether.

The author concludes his paper with some propositions, of which the following are the chief. The existence of a simple inflammatory syphilitic pneumonia is admissible, but is not yet proved. There can be no doubt about the

existence of gummy disease of the lung, for which the author proposes the name of "consumptive pulmonary syphilis." Specific treatment is the best therapeutic means at present known for distinguishing syphilitic from tubercular disease of the lungs. The occurrence of pulmonary disease is not rare, either in late or early acute syphilis. Laryngeal lesions often precede or accompany the affection of the lungs, and the former may be of great value in the diagnosis of the latter. The symptoms of syphilitic disease of the lung are generally those of pneumonic phthisis. Even after death, tubercle cannot always be distinguished from gumma. Tubercle usually attacks the apex of the lung, while syphilis usually (but not always) avoids it. The course of syphilitic pulmonary disease is usually slow and apyretic. Syphilis most usually attacks only one lung, and often only one part of a lung.—*London Med. Record*, Feb. 15, 1881.

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*Treatment of Uræmia by Pilocarpin.*

Dr. Prætorius publishes (*Jahr. für Kinder*, vol. xv. pl. 3) the details of eleven cases of uræmia treated with muriate of pilocarpin, and arrives at the following results: 1. The drug is of distinct value, and should be injected so soon as the symptoms of headache, irregular pulse, vomiting, and diminished secretion of urine appear. 2. Its administration is only contra-indicated in cases of extreme weakness and threatening collapse, or general anasarca. 3. It has no effect in cases of glomerular nephritis; but, since this condition cannot be diagnosed by the microscope, its administration should not be prevented. 4. Pilocarpin is not only a diaphoretic, but also has a direct influence on the renal secretion. An extensive series of references to the use of the drug is appended, as well as a description and method of administration, etc.—*London Med. Record*, February 15, 1881.

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## SURGERY.

*The Benignity of Syphilis.*

In an essay on this subject, to which was awarded the annual prize of the Medical Society of the county of New York, Dr. Charles L. Dana contends:—

*First.*—That syphilis, as a rule, runs a very mild course, indeed, among American seamen, and physically incapacitates them less than either soft chancre or gonorrhœa with their complications and sequelæ.

*Second.*—That it runs this course, often without regular treatment, and almost always in spite of irregular living and unhygienic surroundings. These two conclusions, it may be added, tend to confirm the views of those who believe

(*a*) that syphilis is curable, and, furthermore

(*b*) that it very often has a tendency to spontaneous cure;

(*c*) that this present benignity of the syphilitic poison is due in part to treatment, in part to a gradual change, either in the character of the poison itself, or in the organism it feeds on, or both.

The question of benignity or virulence of syphilis, as it attacks other classes than sailors, is left untouched, and the term "benign" is used only as indicating that the disease is not malignant nor fatal, nor, as a rule, severe.

Dr. Davis's study has led him to believe that philanthropic effort for the protection of seamen from venereal disease might be successfully made in the following directions:—

*First.*—The improvement of his "environment," of his social and sanitary surroundings when on shore; the getting him out of the clutches of boarding-

housekeepers and others who fill him with bad liquor, entice him into brothels and rob him of his money. If his social condition were bettered, his moral improvement would surely follow or go with it. Something is being done in this direction.

*Second.*—The regulation of prostitution. That this would benefit him to some extent there can be no doubt. But the system of regulation would have to be comprehensive and very effectually carried out. It would have to be applied to the whole municipality, and its adoption involves the general question of the regulation of prostitution, which this is not the place to discuss.

Marriage, so far as it is possible, is a help to the sailor. Of the 378 men examined, there were not 30 who were married. The sailor is a celibate. But among these 351 celibates there were 272 cases of venereal disease. On the other hand, of the 27 married seamen, 14 never had had any venereal disease, and 21 never had any during the period of their marriage. Of course, matrimony is often impracticable or unwise, but celibacy is also more frequent than it need be.

As the sailor's sanitary, social, and moral condition improves, the possibility of and desire for domestic life will increase, and will do its share to improve his physical condition.—*Med. Record*, Feb. 5, 1881.

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### *Syphilitic Myositis.*

M. DUPLAY reports (*Archives Gén. de Méd.*, August, 1880, p. 218) two cases of syphilitic disease of the muscles. Case 1. A man aged 69, with no history of syphilis, but having syphilitic tubercles of the chest and double orchitis, was admitted under the care of M. Duplay. There was also, on admission, a tumour five finger-breadths long and four broad, situated a little below the middle of the right thigh on its inner aspect. The tumour had been growing four weeks, and was of the size of a pea when first noticed by the patient. It was hard and somewhat uneven. The skin moved freely over it. On putting the sartorius into action, the swelling was found to be in the substance of that muscle. The tumour rapidly diminished in size under mercury and iodide of potassium, but the syphilide and the testes remained unchanged. Case 2. A woman, aged 27, applied for relief on account of a tumour of the left cheek, which she had first noticed five months previously. On examination a hard swelling was found just above the insertion of the masseter into the lower jaw. The tumour was movable when the masseter was relaxed, but fixed when that muscle was contracted. There was also another swelling at the sternal insertion of sterno-mastoid. No other signs of syphilis could be discovered. Under treatment by mercury and iodide of potassium, both swellings gradually disappeared. There was no history of syphilis in this case.—*Lond. Med. Record*, Feb. 15, 1881.

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### *Treatment of Burns.*

ZELTWEG, as physician in chief to a large iron mining and smelting company in Styria, has cases of burns very frequently presented for treatment, and has found the following method most successful: The wound is first cleaned (without opening the blisters), then disinfected with a 2 per cent. solution of carbolic acid, and covered with a thick furniture varnish prepared from linseed oil and litharge, in which 5 per cent. of salicylic acid has been dissolved by warming. The varnish is allowed to dry and another coat applied; over this a layer of Bruns's cotton is placed, about 2–3 centimetres in thickness. The wound seldom suppurates, generally healing under the varnish, which is finally removed as a dry pellicle, no change of the dressing having been necessary. Should, however, suppuration

be indicated by the setting in of fever, or by the occurrence of painfulness, the dressing is removed from this locality; if the spot be not over 5 centimetres in diameter, nothing further is done than to strew the moist surface with dry powdered salicylic acid; if larger, an opening is cut in the dressing, the salicylic acid is applied as before, and then covered with a fresh layer of cotton. The scars become by this method entirely smooth, white, and are not hypertrophied.—*Lond. Med. Record*, Feb. 15, 1881, from *Prager Med. Woch.*, Oct. 27, 1880.

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*Sudden Death in Gangrene from the Passage of Putrid Gas into the Heart.*

In 1867, Dr. PARISE sent a communication to the Academy, which was accidentally left unpublished, but is now placed on record in the *Archiv. Gén. de Méd.* (November, 1880). Parise observed several cases of sudden death in gangrene of the limbs, and in each instance believed that the fatal termination was brought about by the entrance of putrid gas into the veins, and hence into the heart. Maisonneuve had previously (in 1853) published several cases of rapid gangrene, with the development of putrid gas in the veins of the affected member. But he believed that death was caused by blood-poisoning from this source. Parise, however, affirms that the putrid quality of the gas determines no septic action, but produces death in the same way that air accidentally entering the veins does. In the cases reported by the author the necropsies were made soon after death, and a very careful examination revealed the abundant presence of putrid gas in the right side of the heart and the principal venous trunks. Parise concluded, from the study of his cases, that surgeons should be on their guard against sudden accidents, especially in those cases of gangrene which follow a violent traumatism. Prompt action was necessary. Immediate amputation was the best curative procedure, and should be resorted to unless positively contraindicated by the condition of the patient. In the latter case deep incisions might prove beneficial; or the principal vein might be ligated or merely compressed. Amputation below the point of ligation or compression would have to be performed sooner or later.—*Lond. Med. Record*, Feb. 15, 1881.

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*Excision of the Stomach.*

On the 29th of January Professor BILLROTH, of Vienna, excised about six inches of the greater curvature of the stomach, including the pylorus, for infiltrating carcinoma. The patient was a woman aged forty-three, mother of eight living children, who was suddenly seized with grumous vomiting last October. Marked symptoms of cancer of the stomach and stenosis speedily followed. The operation was decided on in consequence of incessant and uncontrollable vomiting which threatened inanition. The operation lasted one hour and a half. There were extensive adhesions to the omentum and colon. Fifty silk sutures were used to unite the duodenum and the remaining portions of the stomach. On the 5th inst. (a week after the operation) the sutures were removed from the external wound, which had united without reaction. The patient was doing well, and was able to take coffee, tea, and other light nourishment. This is the second time the operation has been done. M. Péan did it in 1879, removing a carcinomatous pylorus. In that case catgut ligatures were employed. The patient died on the fourth day.—*Lancet*, Feb. 12, 1881. The case is fully reported in the *Wiener Medizinische Wochenschrift*, Feb. 5, and current number of the *Medical News and Abstract.*

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*On Nephrectomy.*

Professor HERMANN LOSSEN, of Heidelberg, reports (*Deutsche Zeitschrift für Chirurgie*, Band xiii. Heft 3, 4) an important case of successful removal of

a sarcomatous kidney, from a woman in the third month of pregnancy. The patient, who was 37 years of age, and the mother of eight children, applied for the treatment of a rapidly enlarging, though painless, swelling of twelve months' growth, in the right side of the abdomen. On examination, this was found to be a round tumour, of the size of a child's head, of firm consistence, and freely movable, as far as the median line. A second tumour, that could be felt just above the symphysis pubis, was formed by the enlarged uterus. There had not been any menstrual discharge during the previous ten weeks. The urine was normal as to quantity, and quite clear. The case was diagnosed as one of tumour of the right ovary, and Professor Lossen proposed to operate when the patient had passed into the fourth month of pregnancy. In consequence, however, of rapid increase in the size of the growth, it was found necessary to attempt its removal after an interval of three weeks from the first inspection. The tumour, after incision of the linea alba from the umbilicus, was found lying behind the posterior parietal layer of the peritoneum; its surface was of a bluish-white colour, and traversed by enlarged veins. After careful dissection, a portion of the small intestine being drawn outwards through the external wound, and protected by carbolic-acid compresses, it was made out that the growth was implanted by a broad base on the convex margin of the right kidney, which viscus had a very long pedicle. Immediately after excision of the tumour, together with the kidney, there was profuse hemorrhage from the pedicle, in consequence of slipping of a provisional ligature. The bleeding having been arrested for a time, through compression of the abdominal aorta, the pedicle was taken up, and secured by a Spencer Wells's clamp. The operation was performed, and the abdominal wound subsequently dressed, with attention to all the details of the antiseptic method. The patient ultimately made a good recovery, and was able to return to her home in the sixth week after the date of operation. The progress towards recovery, however, was interrupted by abortion, commencing three hours after the operation, and by subsequent septic endometritis, which was promptly and heroically treated by intra-uterine injections of a 5 per cent. solution of carbolic acid. The clamp was removed on the fourteenth day. The quantity of urine, which was much reduced soon after the operation, rapidly increased, and attained its normal amount. On the second day after that of the operation, 670 cubic centimetres were passed during twenty-four hours; on the eighth day 1000 cubic centimetres, and on the eleventh day 1500 cubic centimetres. This, like the first case of nephrectomy, performed by Gustav Simon, shows how rapidly a healthy kidney may take on the functions of the fellow organ.

The tumour, which presented the microscopical characters of angiosarcoma, was inclosed in a tough fibrous capsule, continuous with the capsule of the kidney. This organ seemed to be quite healthy; and, on transverse section through the kidney and tumour, a marked difference was presented between the firm, dark red, and striated structure of the former, and the soft, medullary, and pale structure of the morbid growth. There was a distinct boundary line at the surface of the kidney, and it was evident that the tumour had originated, either in the renal capsule, or in the superficial portion of the renal cortical substance. From the abnormal length of the renal pedicle, and the extreme mobility of the diseased organ, the author is disposed to regard this as a case of malignant disease attacking a floating kidney.

Professor Lossen states that this is the second case of successful extirpation of a solid renal tumour. The first case, which resembled this in many respects, and was also one of angiosarcoma, has been reported by Dr. A. Martin, in the *Berliner Klinische Wochenscrift*, No. 22, 1879. There can now be no doubt, it is asserted, that the condition of pregnancy need not prevent the surgeon from

operating for the removal of an abdominal tumour. Of fourteen cases, collected by Olshausen, of ovariotomy performed on pregnant women, death occurred in two only, and in four only of the survivors was the pregnancy interrupted. In the present case, it was intended to postpone the operation until the fourth month, in order to avoid abortion, but it was found necessary to attempt the removal of the rapidly growing tumour before the expiration of the third month. Even under these conditions, there seemed to be a fair chance of preservation of the fœtus. The woman, who had given birth to eight children, was strong and healthy, and the uterus was not exposed during the operation. The abortion, which commenced about four hours after the operation, was very probably due to shock and loss of blood, and to temporary compression of the abdominal aorta, exciting contractions of the uterus.—*London Med. Record*, Jan. 15, 1881.

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*Supra-pubic Cystotomy.*

There will always be considerable interest attaching to this operation, for in some obvious ways it is marked out as the best means of opening the bladder for the removal of foreign bodies. But the two dangers of wounding the peritoneum and of urinary infiltration have caused its abandonment in general practice, although for the removal of very large stones it is still sometimes employed. PETERSEN, in the *Arch. für Klin. Chir.*, has recently drawn attention to plans by which he hopes both of these dangers may be minimized, and the operation brought into more general use. He supports Braune's observation, that if, after the bladder is distended, the rectum is also distended, the bladder is so pushed up and forwards that the peritoneum on the apex of that viscus looks upwards rather than forwards; and in two cases thus operated upon the serous membrane was not even seen, while in two others it was easily pushed up and kept out of the way of injury. To prevent urinary infiltration he has practised suturing the incision in the bladder with catgut to get union by primary adhesion. If this is attempted the operation must be conducted with special precautions; the incision in the bladder must be free, and no dilatation of the wound practised either in introducing the forceps or removing the calculus; for all dilatation means greater or less bruising of the edges of the wound, which will entirely prevent union by first intention. We are not surprised therefore to read that in his last case Petersen was not successful in procuring this favourable healing of the wound. Stitching up wounds in the bladder with catgut is not a novel procedure, and Mr. Heath raised the subject for discussion at the Clinical Society a few years ago in connection with a case of rupture of the peritoneal surface of the bladder, in which he had followed out this practice. The case is not strictly analogous to that we are noticing, but near enough for rough comparison. Petersen formulates the conditions suitable for the "high operation": (1) large hard stones; (2) encapsuled stone or stones lodged in saccules behind the prostate; (3) hypertrophied prostate; (4) hæmorrhoids; (5) very fat people; (6) tumours of the bladder; and (7) impermeable stricture where it is desired to pass a fine catheter from the bladder along the ureter.—*Lancet*, Feb. 26, 1881.

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*Treatment of Vesical Catarrh by Establishing Urinary Fistulæ.*

In hopeless cases of chronic cystitis it has occurred to Dr. D. HAYES AGNEW, that the life of the patient might be made comfortable by separating the connection of the ureters with the bladder and bringing them out through the abdominal walls, establishing fistulæ either in the iliac or in the lumbar region, and thereby diverting the urine entirely from the bladder. That such a route

for the escape of the urine is not so objectionable as might be supposed will appear from the experience of two persons in this city who suffer from urinary fistula occasioned by accident, one of whom is able to attend to his occupation—that of a daily labourer—by swathing the body with a thick roll of bandages, by which the urine is absorbed. If the fistulæ were favourably situated, mechanical appliances might be constructed in which to receive the urine.

The feasibility of the procedure proposed, Dr. Agnew has satisfactorily verified by dissection and operation on the cadaver. At first he supposed the proper route to the ureters would be through the loin, as in lumbar colotomy; but the colon on each side is an obstacle which cannot readily be overcome. The plan which he pursued was to make an incision beginning one inch below the anterior extremity of the last rib, and terminating two inches below the anterior superior spinous process of the ilium. After dividing the skin, superficial fascia, external and internal oblique and transversalis muscles, the transversalis fascia is next broken up, together with the loose tissue connecting the peritoneum with the iliac fossa. It only remains to detach carefully the serous sac until the primitive iliac vessel is reached, at the bifurcation of which into external iliac and internal iliac the ureter will be found to pass into the pelvis. Following the tube down, it should be severed as near to the bladder as possible, two ligatures having been previously applied (the lower one catgut), and the division made between the two threads. To relieve any tension on the ureter, a puncture is next made through the parietes a short distance above the upper angle of the wound, and the urinary duct piloted through by means of a probe secured to the end of the ligature previously attached to the ureter. It only remains to detach the thread from the duct and to secure the latter by two stitches to the external opening, after which the main wound can be closed. It would not be proper to operate on both ureters at the same time. The patient should be allowed to recover from the first before proceeding to the second. Nor would such a surgical procedure be advisable if there was reason to believe that the kidneys were seriously implicated.—*Phila. Medical Times*, Feb. 12, 1881.

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### *Carden's Amputation.*

The thirty-fifth number of the *Centralblatt für Chirurgie* contains a report by Dr. P. KRASKE, of Halle, on the results from Carden's or the transcondyloid amputation of the thigh, obtained in Volkmann's clinique during the past seven years, and since the introduction of the antiseptic method into surgical practice. In this report, it is pointed out that what was alleged to be a very favourable condition of the operation when first proposed, need not at the present day be taken into consideration in any judgment of the value of the proceeding. Before the antiseptic period in surgery, the chief advantage of Carden's method of amputation consisted in the fact that, as the medullary canal was not exposed, the risks of osteo-myelitis were thus much diminished. Now, however, where Lister's practice is carried out, no distinction can be made, with regard to the resulting mortality, between amputations which do and those which do not expose the medullary canal.

Carden's operation, though it has lost one of its special advantages, is yet to be regarded, Dr. Kraske holds, as the best amputation for the lower part of the thigh. No other is capable of affording such good *functional* results. In consequence of the length of the stump, the patient is able to walk with much ease and security; and in many instances the weight of the body, both in locomotion and in standing, can be supported on the extremity of the thigh. This extremity is very broad, and, in cases where the healing of the stump has progressed favourably, is covered by healthy and intact skin. The cicatrix in such favourable instances

is situated on the posterior surface of the stump, where it is protected against pressure.

Though in many of his cases Volkmann has observed a very useful stump after Carden's amputation, the results of the operation in this respect are not always so satisfactory. The extremity of the stump is often very tender, and the patient is unable to bear any pressure on it during locomotion. This condition is almost always the result of mortification of the anterior flap, which, unfortunately, often occurs after the operation, especially in old and debilitated subjects. When the whole or a considerable portion of this flap has been destroyed through sloughing, a broad adherent cicatrix is formed, rendering the stump almost useless, and often necessitating subsequent resection of the bone.

In order to guard against sloughing of the anterior flap, the author thinks it better to take a shorter flap from the front of the limb, and to dissect out from the popliteal region a flap extending as far downwards as the head of the fibula. Both flaps, which are formed of skin only, having been turned upwards, the leg is to be separated at the knee, and the patella then removed. The femur should be sawn through at the thickest part, and its sharp margins, especially in front, be rounded off by bone-pliers. If the synovial pouch under the extensor muscles extend far upwards, an incision should be made into it at its upper extremity, and a drainage-tube be passed from the surface of the limb. A small piece of drainage-tube is inserted at each angle of the wound, and care is taken to maintain the anterior flap in close contact with the whole of the sawn surface of the femur.

In all the cases of Carden's amputation performed by Volkmann during the past three years, the treatment of the wound has been strictly antiseptic. In several instances the result was fatal, but in most of these death was due to the association of multiple injuries, or of other complications. In not a single case treated according to Lister's method, did phlegmon, diffuse suppuration, or erysipelas occur.

When the stump has so far healed as to permit the patient to move about with the aid of some artificial support, use should at first be made, according to Dr. Kraske, of an ordinary wooden leg with a bucket, the pressure of which must be received at the tuber ischii, and within which the stump for a time is allowed to hang freely. Pressure should then be gradually applied to the extremity of the stump, by inserting at intervals at the bottom of the buckets successive layers of wadding or of leather. It is regarded as a point of much importance that the patient should commence as soon as possible to go about, and to use his stump as an agent of support. It is only by early exercise of the stump, that atrophy of the bone, and consequent uselessness of the extremity, can be prevented.

During the past seven years, Volkmann has in thirty-two instances performed Carden's amputation under antiseptic conditions. In twenty-five of these cases the result was successful, and the patients, nine of whom were between fifty and eighty-four years of age, made good recovery. In three of the seven fatal cases, death was due to severe multiple injuries, necessitating double amputation, in one case to tetanus, in two cases to exhaustion through prolonged suppuration, and in the last case to gangrene of the stump and secondary hemorrhage from the main artery.—*London Med. Record*, Jan. 15, 1881.

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### *Ogston's Operation for Knock-knee.*

In the Medical Society of Leipzig, Feb. 10, 1880 (*Berl. Klin. Woch.*, Dec. 13, 1880), Herr Graefe exhibited two cases of genu valgum. One had been operated on twelve weeks previously, and recovered perfectly under antiseptic treatment. The patient was allowed to walk in seven weeks, and, though he

still wore a metal splint for precaution's sake, he could use the limb without any uneasiness, could bend the knee to 120 deg. actively and passively, and Herr Graefe, who was treating him with daily passive movements, expected a much greater mobility. The second patient was operated upon for genu valgum of the left side two years ago, at the age of sixteen, and remained in hospital about eight weeks. The cure was satisfactory, the motion good, and he at once resumed his fatiguing occupation of house-servant. No splint was used, yet the patient felt no harm. Flexion and extension were well performed, the knee being easily bent beyond a right angle. Neither relapse nor shortening was observable; so much so that he wanted a medical certificate that an operation had been performed, to shield him from being compelled to enter the army. Herr Graefe concluded by discussing the arguments for and against the operation. The objection of its danger, in comparison with the slight inconvenience caused to the patient by his deformed leg, and especially as contrasted with other operations, was answered by the statement that, while such an operation is a folly, save under antiseptics, it is with their aid no more perilous than the other proposed osteotomies. The operation *per se* cannot be blamed for the pyæmia and suppuration that have occurred in some of the cases. It is also stated that it constitutes too serious an interference with the delicate mechanism of the knee-joint. Admitting that there is a considerable interference with the joint, it by no means follows that harm should result from this, if reasonable care be taken in the after-treatment of "Ogston-knees." Considering the short time the operation has been on its trial, it is premature to draw any conclusions; but the coming decennium, and its experience, may enable this question to be solved. It has been, in the third place, objected that the interference with the epiphysial cartilage in its linear division by the saw may impair the growth of the limb in adolescents and in rickety children. This, however, is a theoretical statement, resting on no proof whatever. It is true that total or partial destruction of an epiphysial cartilage stops the growth of a bone; but whether a linear antiseptic division of the cartilage, accompanied by mere vertical displacement, without separation of continuity, will have the same effect, is a point that future experience alone can decide. Herr Graefe's cases seem to point to this and the previous objection as being incorrect. At the conclusion of the communication, Herr Thiersch demonstrated the well-known preparation, showing the state of parts of the femur five weeks after an Ogston's operation.—*Lond. Med. Record*, Feb. 15, 1881.

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*Yellow Pus.*

In 1854, M. Delore, of Lyons, described six cases of open wound in which the purulent discharge had been observed to be of a bright yellow colour. This condition was regarded by M. Delore as one of very serious import, as each of his cases terminated fatally through pyæmia. M. VERNEUIL, in a recent contribution (*Arch. Génér. de Méd.*, No. 12, 1880) on this discolouration of pus, which he terms *suppuration orangée*, states that he has had many opportunities of observing it during the past twelve years, especially in 1870, during the siege of Paris. These cases, though not all fatal, yet confirm the opinion of M. Delore as to the gravity of the yellow staining of pus as a prognostic indication. This staining, M. Verneuil holds, is a serious phenomenon, not so much in consequence of any intimate relation that it bears to pyæmia, as from its being indicative of some dyscrasia. The phenomenon of bright yellow suppuration has been observed most frequently in cases of extensive laceration and contusion of the soft parts of a limb, in association with comminution of bone. It usually occurs on the fourth or fifth day, and after the commencement of sloughing. It is, as

a rule, a very transient phenomenon, and lasts but for two or three days. The staining is not diffused, but is due rather to the abundant presence in the pus of small and soft flakes of a bright-yellow colour. According to M. Robin, the yellow staining is the result of the presence of hæmatoidine and reddish-yellow amorphous colouring matter. The late M. Broca endeavoured to establish an analogy between yellow and blue suppuration by means of cultivation experiments. These, however, whilst they invariably succeeded with blue pus, always failed with yellow pus. M. Verneuil has been led to seek for the predisposing cause of yellow suppuration in some constitutional affection of the patient. In his earlier cases that were observed in the crowded hospitals of Paris during the siege and the rule of the Commune, he found, in almost every instance, that the patient had been a drinker, and he was thus at first disposed to regard alcoholism as the sole predisposing cause of the staining. In some more recent cases, however, in which suspicion could not be entertained, he was able to establish clear histories of other dyscrasiæ. Some of these patients were diabetic, others were the subjects of phosphaturia, and in one case the patient was suffering from the effects of repeated administration of morphia. It is concluded that yellow suppuration results from the association of certain forms of wound with a certain class of abnormal constitutional condition. With regard to treatment, M. Verneuil simply points out that this staining of purulent discharge indicates the necessity of frequent cleansing of the wound, and of directing attention to the state of the patient's constitution.—*London Med. Record*, Feb. 15, 1881.

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## OPHTHALMOLOGY AND OTOLOGY.

### *Pterygium.*

The etiology and pathology, no less than the treatment of pterygium, have long presented considerable difficulty to ophthalmologists. The affection, indeed, is apparently a slight one in itself: nevertheless, its tendency to encroach on the cornea, and thus seriously to interfere with vision, coupled with the fact that the operation for its removal is frequently followed by recurrence, besides being in itself not wholly free from danger, give it a greater importance than might otherwise be claimed for it.

A variety of theories have prevailed as to the etiology of pterygium since the time of Scarpa. At the present moment the generally accepted view is that first propounded by Arlt, and subsequently more thoroughly worked out by Horner. According to these observers, in every case of true pterygium either a primitive ulcer or a patch of ulcerated herpetic vesicles has at one time existed at the margin of the cornea. In this way the protecting epithelium, and probably the membrane of Bowman, have been destroyed, and a granulating surface has been left, to which the conjunctiva has in time become adherent. Under the influence of cicatrization, it has subsequently become stretched and hypertrophied, and in this way has formed the body of the pterygium, between which and the sclerotic new layers of epithelium are later on to be developed.

This theory may suffice to account for the fact that pterygia are often found adherent by one point only to the cornea, while in the remainder of their course they rest on the conjunctiva beneath, though not in any way connected with it, save at their immediate origin. It leaves, however, quite untouched the problem of their steady onward growth towards the centre of the cornea, and of the tendency they exhibit to recur after removal.

Some recent researches of Professor PONCET, of Cluny (*Archives d'Ophthalmologie*, No. 1), are probably destined to throw a good deal of light on these points. This observer, having had occasion to examine after death a pterygium in an otherwise perfectly healthy eye, discovered the presence of large numbers of vibrios and spores within the ulcerated *cul-de-sac* upon the cornea, and under the cicatricial fold of conjunctiva. The microcosms in this case could not, on account of the minute precautions taken, be looked on as due to *post-mortem* changes. Hence, they must have existed during life, and if so, their presence in the peculiar situation in which they were found would seem to afford a solution of many of the pathological difficulties connected with the growth and recurrence of pterygium.

According to Professor Poncet, these parasitical microcosms form a nidus beneath the folds of conjunctiva, and thereby maintain a condition of extremely chronic irritation. They work, as it were, underground, removing the fibrous tissue, atom by atom, surreptitiously, and without any visible inflammatory reaction, destroying the epithelium, and penetrating between the laminæ of the cornea, which probably offer less resistance to their corroding action than do the tough interlaced fasciculi of the sclerotic. Their progress is most manifest in the cornea, because the condition of that membrane is altered by the changes they induce, and is thereby rendered opaque. In the cornea the anatomical arrangement of the parts serves to account also for the fact that the vibrios do not spread over it entirely, but as a rule stop short of its centre. The cause of this lies in the arrangement of the corneal lymphatic vessels, the course of which they may be supposed to follow. The lymphatic vessels of the conjunctiva, as Waldeyer has shown, advance singly to the corneal limbus, and there form by the union of two or three branches a triangular plexus, offsets from which anastomose with the canaliculi, and form the summit of the corneal lymphatic triangle.

Thus far as to the shape and slow non-inflammatory growth of the corneal portion of the pterygium. As regards its large triangular body, a parasitical origin cannot be so distinctly shown. Its presence is more probably due, according to Poncet, to long-continued irritation, owing to a development of epithelial cysts within the folds of hypetrophied conjunctiva. Once the conjunctiva has formed a longitudinal fold, this elevated portion becomes extremely liable to irritation and hypertrophy from external causes. The change of the superficial epithelium into a cylindrical or calyciform variety, its grouping in pouches like racemose glands, the development of acini, all point to the genesis of a neoplastic growth, destined probably to lubricate the irritated mucous membrane. This modified epithelium fulfils a function similar to that of the sclerosed tissue on which it rests, namely, to facilitate the motions of the palpebral conjunctiva over its surface.

The therapeutic importance of the discovery of a possibly bacterian origin for pterygium will be at once evident. The treatment of the affection may henceforth be subdivided into the treatment of its corneal or smaller portion and its conjunctival or larger. For the first, the object must be to thoroughly free the cornea from the parasites which infest its superficial laminæ immediately around the limbus. Nothing short of the complete removal of the superficies of the affected portion will suffice. There need not be the least hesitation felt in carrying out this treatment thoroughly, inasmuch as, owing to the destruction of the membrane of Bowman by the ulceration which already exists, the cornea can never under any circumstances regain its transparency. Antiseptic dressings and immediate application of boracic acid, or weak solutions of carbolic acid, are also necessarily indicated. As regards the conjunctival portion, complete removal is demanded, not merely of the triangular and affected portion, but also of the

modified epithelium, which is found at a distance of two or three millimetres on each side of it. Whatever be the method of removal adopted, whether transplantation or abscission, care must be taken that the edges of the wound, when brought together by sutures, are clothed with perfectly normal and healthy epithelium.—*London Med. Record*, Feb. 15, 1881.

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## MIDWIFERY AND GYNÆCOLOGY.

### *Version during Labour by External Manœuvres.*

M. LABAT relates (*Ann. de Gyn.*, Jan. 1881) two cases in which he performed version during labour by external manipulations. He says that whenever a presentation less favourable than the vertex is made out during labour, version by external manœuvres should be attempted if the fœtus be mobile. It must be remembered, however, that moderation must be observed in the manipulations. Rupture of the uterus might result from forcible efforts to turn the child. During labour, the uterus is less tolerant of interference, and its walls do not support pressure so well as during pregnancy. In the two cases recorded by Dr. Labat, no precaution, such as the application of Dr. Pinard's eutocic belt, was adopted to secure the vertex presentation obtained. This was because the contractions of the uterus at once fixed the head in the brim. Dr. Labat concludes: 1. Version by external manipulation is possible in certain cases during labour; 2. When the situation of the fœtus is transverse, and the placenta is inverted near the os uteri, cephalic version by external manipulation renders the hemorrhage less severe; 3. When cephalic version is impossible, pelvic version should be resorted to; 4. During labour, the application of the eutocic belt is not always necessary. [The eutocic belt is designed by Dr. Pinard, in the form of a modified binder, to apply round the abdomen to retain the head on the brim of the pelvis after external version has been performed. Dr. Pinard thus secures a head-presentation weeks before the labour sets in.—*Rep.*]—*London Med. Record*, Feb. 15, 1881.

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### *Can Syphilis acquired by the Mother during Pregnancy be Transmitted to the Child in Utero?*

Dr. VAJDA enters at considerable length (*Wien. Medizin. Wochensch.*, Nos. 30, 32, 1880) into this question, touching on many of the cases hitherto recorded which bear on the point. He comes to the conclusion that a mother can infect her offspring *in utero*, and doubts the correctness of the view which holds that a mother can produce a syphilitic child without being herself syphilitic. The following illustrative case is given. Between the 20th and 24th of June 1878, a man contracted syphilis and returned to his wife, who was at that time in the fifth month of pregnancy. On August 10th, Vajda examined the wife, and found her healthy; she became infected on September 9th, and on October 17th a hard chancre and indolent glands were present. The child was born at term, but a papular eruption appeared seven weeks after birth. Psoriasis and pustules followed. The author states that extra-uterine infection could be excluded in this case, as well as a previous attack of syphilis in either parent.—*London Med. Record*, Feb. 15, 1881.

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### *A Series of 172 Antiseptic Abdominal Sections.*

Mr. KNOWSLEY THORNTON, at a late meeting of the Royal Medical and Chirurgical Society (*Lancet*, Jan. 15, 1881), read a paper "on 172 antiseptic abdo-

minal sections, with remarks on the causes of death in the fatal cases," of which the following is an abstract:—

After some remarks as to the details given in the printed tables which accompanied the paper, the author pointed out certain further information which it is desirable should accompany statistical tables of operation cases. First: an account of all cases of abdominal tumours seen during the time covered by the tables, but not operated upon, with the reasons why no operation was performed. Second: the highest temperature and pulse, with the day of the operation upon which they were respectively recorded. Such additional information is necessary in order to show the success of the individual surgeon in dealing with ovarian or other similar disease, and the general progress in this branch of surgery, and also to show the well- or ill-doing of the cases which recover after operation. The fact that all the cases had been treated on Lister's method, and nearly all by the complete intra-peritoneal ligature, was dwelt upon. Common methods of treatment in a large series of cases being especially useful in extending knowledge by affording material for comparison with other methods, the importance of accurately following the teachings and practice of Lister, to the exclusion of so-called "modified Listerism," was insisted on. In the author's hands the *pure Listerism* had reduced the mortality in the most common operation in the tables—ovariotomy—from 23.94 per cent. to only 4 per cent., a result altogether beyond the mere improvement to be expected from increased experience in performing the operation.

The question of drainage, by means of Keith's improved form of Koeberlé's glass tube, was then discussed, the small mortality in the last 75 ovariotomies (4 per cent.) being claimed as a proof that drainage is unnecessary if Lister's method be perfectly carried out in abdominal section, comparative statistics being given to prove the same conclusion. The question of selection of cases was alluded to in relation to two of the three deaths in the last series of 75 cases; both were apparently hopeless, but were given the last chance; and both, though open to question as to completion, were included among the complete operations. The question as to what cases should be called complete or incomplete was then discussed.

A comparison of the mortality in simple and difficult cases (it is *nil* in the author's hands in the former), in the cases tapped and not tapped, and in those which had only one or both ovaries removed, was also given. The causes of death in the fatal cases were then given in some detail, and the bearing of the antiseptic method on the mortality was illustrated by a division of these cases into *three* groups. The danger arising from the transfixion or opening of a diseased Fallopian tube was pointed out as a possible cause of septicæmia—a question also important in dealing with uterine fibroids. The incomplete ovariotomies and other operations in the tables were discussed, and, passing to the treatment of uterine tumours by abdominal section, the author pointed out the difficulties in the application of Lister's method to those cases in which the uterine cavity is opened, and showed from his own statistics that, whereas in cases in which the cavity was not opened the mortality was only one in eight (and that one a very exceptional case in many respects), in cases in which the cavity was opened three out of four died.

The general conclusions drawn from the whole 172 antiseptic cases were as follows: 1. Simple cases recover under Lister's method, with a certainty previously unknown. 2. There is less fever, and convalescence is more rapid, than under the old method. 3. The success obtained in the more complicated cases is in proportion to the exactness with which the antiseptic method can be applied to the individual cases. 4. The accidents and complications occasionally following ope-

ration, such as hemorrhage, for example, are more easily overcome in aseptic cases. 5. There are difficulties and some dangers in the application of the method, and the more experience the individual surgeon has in it, the more readily he foresees and avoids these, and the more complete becomes his success in applying it. In a few concluding words the author pointed out how much peritoneal surgery owed to Mr. Lister, and how much more to Mr. Wells; without the untiring energy and success of the latter it would never have been in the position to benefit by the method of the former.

Dr. BANTOCK began by referring to the debate which had taken place at the last meeting of the Society, and criticizing the remarks made by Mr. Thornton on that occasion. He maintained that his own experience, though comparatively small, was sufficient to prove the inefficiency of Listerism. Mr. Thornton's reference to his (Dr. Bantock's) hospital statistics before they had been published was unusual, and if, instead of quoting the last year's figures, he had given those of the previous year, he would have found that the rate of mortality as between his cases and Mr. Thornton's was reversed. The opinion he held that carbolic acid was injurious was shared in by many, for some of the most eminent Continental surgeons had attributed fatal results to its use. In considering the subject of drainage it must be remembered that drainage is always applied to the most severe cases, and to say that in such cases death is due to the use of the drainage-tube is to beg the question. In his own practice the daily diminution of the discharge showed that the drainage-tube did not excite suppuration; and the specimens of fluid he showed on the last occasion proved this, for they were perfectly aseptic. He believed tapping to be most injurious, and would say that it should never be done unless the operator were prepared to follow up the procedure by removal of the cyst. It was harmful, not because of its liability to cause septic poisoning, but because of its leading to inflammatory changes in the cyst. He had removed a cyst (not previously tapped) where the fluid was putrid; the drainage-tube was used, and the temperature fell at once after the operation. He did not believe at all that septic matter could be introduced through tapping. That suppression of urine was more frequent since antiseptics had been used was shown by the fact that it was only once met with by Mr. Spencer Wells in 800 cases; and he himself (Dr. Bantock) never had a case of suppression until he adopted the Listerian method. Dr. Keith's statistics, showing a mortality of 1 in 26 without antiseptics and 1 in 24.5 with antiseptics, were significant. Dr. Bantock concluded by showing that the consumption of ice at the Samaritan Free Hospital had risen considerably since Mr. Thornton's introduction of the ice-cap and his employment of Listerism, and he thought this fact was opposed to Mr. Thornton's statement that there was less fever since the adoption of Listerism than before.

Mr. HULKE asked Mr. Thornton if he would state precisely what he meant by Lister's own method. Mr. Lister had, no doubt, greatly modified his method, and it would be satisfactory to know exactly the details as now carried out.

Mr. THORNTON said the procedure was as follows: The abdomen is washed by the nurse before the operation with a 5 per cent. solution of carbolic acid, and a cloth soaked in this solution is lightly bandaged on until the operation begins. All the instruments, ligatures, etc., are placed in trays containing this solution, which is diluted with warm water to 2½ per cent. shortly before the operation. The strength of the solution in the spray bottle is also 5 per cent., which is diluted by the steam of the spray-producer to about 2½ per cent. The sponges (always well cleansed after each operation by ammonia and by sulphurous acid—1 in 8) are kept in a 5 per cent. solution, and during the operation are washed in warm water, and then in a 2½ per cent. solution. Gauze is applied directly over

the wound, is strapped on, and not removed until ten days after the operation, by which time the wound will (in 99 cases out of 100) be found healed by the first intention, so that it is not necessary to use the spray in removing the ligatures. Gauze is again put on, and the patient goes out with the wound quite healed.

Mr. HEATH congratulated Mr. Thornton upon the plain way in which he had given the facts of all his operations—especially for including his uncompleted operations in his tables. But why were no cases given beyond June last? Ten years ago he held office at the Hospital for Women and performed and witnessed many ovariotomies. He had been pleased to find that Mr. Wells and his colleagues at the Samaritan Free Hospital had come round to the views which were then held at Soho-square, viz., that preliminary tapping was bad, and that ligature was the best method of treating the pedicle. The results they then had were very good. It was remarkable that in all Mr. Thornton's fatal cases there were adhesions; for this proved the truth that if the case be a simple one it does well. Ovariotomy might be compared with lithotomy, where, if the stone be a large one, the chances are against recovery. So in ovariotomy, if the cyst be very adherent, the chances of a fatal result are the same whether the case be treated by drainage or by antiseptics. Therefore he believed that as good results might be expected without the use of the spray as with it; and in his own experience the wounds healed readily; far different from the cases where the clamp was used, when patients used often to go out with the wound unhealed.

Dr. HEYWOOD SMITH, alluding to the removal of uterine fibroids, especially of the intramural class, when symptoms are more urgent, asked whether in such cases oöphorectomy should not be practised, as it seems to give some hope of the arrest of growth of such tumours. The introduction of antiseptics had certainly reduced mortality in cases of old vascular adhesions, which before the days of antiseptics were often a source of danger from the oozing of blood into the peritoneum.

Dr. CHAMPNEYS pointed out that statistical tables dealing only with ovariotomy were somewhat misleading, for they take no account of those cases which are passed over as unfit for operation, and which by rights should be placed on the side of the fatal cases. Every encouragement should be given to surgeons to operate in all doubtful cases, disregarding the influence this might have in raising the rates of mortality; for cases were met with in which after death it was seen that the tumour could easily have been removed.

Mr. THORNTON disclaimed any intention of entering into a repetition of the debate which took place at the last meeting. The statistics he then quoted from Dr. Bantock's practice had been mostly published by that gentleman in a letter to one of the medical journals. The apparently excessive consumption of ice, on which such stress had been laid, arose from the great waste due to the storage of ice at the Samaritan Free Hospital; and it was not found to be necessary to keep such a supply now, for the ice-cap was very rarely used. He did not think anything would be gained by entering into controversy on the matter after the exhaustive debate at the last meeting, but preferred to wait until fresh facts were brought before the Society. If the fluids shown by Dr. Bantock were really aseptic, it would prove that the air of the hospital—and, indeed, the air of London—was purer than the air of Mont Blanc when Professor Tyndall made his experiments. He no longer used any "protective," for Mr. Lister does not use it for wounds of which the edges can be kept in apposition. The reason why the tables included no cases of the past six months was simply that the paper had been written for some time, and included other abdominal sections up to that date (June). He did not imply that all the bad cases died—indeed, under antiseptics a large percentage of bad cases recover. He agreed with Mr. Heath as

to the inutility of tapping, and the value of ligatures, and had early come to that conclusion when seeing cases treated by tapping and by the clamp. He hoped that some day the subject of operation for uterine fibroids would be discussed. He had avoided mention of oöphorectomy—an operation which he was sorry to see was being coupled with ovariotomy, whereas it was a far simpler measure, and the indications for its performance had yet to be defined.

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*A New Method of Performing Ovariotomy.*

At a late meeting of the New York County Medical Society, Dr. EMIL NOEGGERATH read a paper entitled as above, of which the following is an abstract:—

Having spoken of the three principal sources of danger—hemorrhage, shock, and septicæmia—each alone, or two or more combined, constituting the most frequent cause of death, the writer considered the question how to avoid shock. From Wegener's experiments on animals, and from clinical observations, which had been made since then, it could be assumed that the principal element of shock was lowering of temperature. Since so large a surface was exposed to evaporation, it could readily be seen how this cause would operate in ovariotomy. Another element in the production of shock was the prolonged contact of the contents of the abdomen with fingers, instruments, etc., and their unavoidable dislocation; a fact also proven by experiments on animals. If we added to these the influence of narcotism, with its paralyzing effect on the heart, its well-known tendency to lower the temperature of the body, and the injurious effect of vomiting, which added to the mechanical insult offered to the viscera, he thought he had enumerated all the circumstances, a combination of which rendered laparotomy dangerous from this source. Beginning with the last, he then gave an account of the manner in which he attempted to prevent shock. After a long trial with the usual anæsthetics, he had returned to the use of chloroform, first, because he had failed in a number of instances to produce deep and uninterrupted sleep with ether; and, secondly, because nausea, vomiting, and coughing during and after the operation had been less frequent after the use of chloroform. A patient to be operated upon in the afternoon of a certain day was ordered to take on the day previous, and the one preceding this, one drachm, and on the morning before the operation thirty grains, of bromide of potassium, in acordance with the plan formerly proposed by Dr. Lente. The patients required less of the anæsthetic; the period of excitement was considerably diminished; the sleep was more natural; and vomiting was less frequent than without it. For the last two years he had added another safeguard also; namely, the administration of one or more doses of thirty grains of chloral per rectum; and since he had been employing bromide of potassium before, and chloral after, ovariotomy, vomiting had been an extremely rare occurrence. In order to prevent lowering of the temperature, he placed his patients on a rubber bed filled with water heated to 100° F. or 110° F. Dry heat was much less depressing than damp heat, which was almost universally employed, because it did not interfere with the evaporation from the lungs and from the skin; and it possessed the further advantage that it could be conveyed to the body in just such unvariable strength and duration as was required. Still another advantage over the old method was its effect upon the reflex centres in the spinal cord. Abdominal hyperæmia had been proved to be an essential element and a direct consequence of shock, and if we included with the reflex paralysis of the vaso-motor system that of the splanchnicus, in consequence of traumatic insult, all the phenomena were explained: the patients were pale; the brain was anæmic; the heart contained little blood, and the portal system of veins was engorged. We could, therefore, measure to a certain extent the degree of shock which was developed during ovariotomy by

the amount of hyperæmia found inside the abdominal cavity; but since he had operated with his patients on the hot-water bed he had observed that even in operations where the viscera had been exposed more than an hour and a half the abdominal blood-supply had not apparently been larger than in the normal state.

The most important danger connected with ovariotomy, he continued, consisted in the formation of septic material in the abdominal cavity after the operation; and it was evident that it must be the effort of the surgeon to allow as little septic matter as possible to come in contact with the serous membrane. The desired object would be obtained most effectively if we could lessen the space and time of contact of the peritoneum with the air, hands, and instruments from what was now the case in the method of operating ordinarily employed. Dr. Noeggerath then gave the following details of the plan which he had adopted: "I commence by incising the skin, the subcutaneous layer of fat, and the fascia superficialis to the extent of about three inches. Instead of going on incising the tissues down to and through the peritoneum, I plunge the trocar at once into the cyst and empty it out. If I find that the liquid is bland, I proceed with the operation; if it should contain pus, decomposed blood, or dark, grumous fluid, I inject through the tube attached to the trocar about half as much of a two-and-a-half per cent. solution of carbolic acid as the fluid measured when removed. This is allowed to remain in the cyst for a while and is then withdrawn. This is done in order to remove the possibility of infecting matter passing from the cyst into the abdominal cavity during the further progress of the operation. After the cyst is fully emptied I depress the handle of the trocar toward the skin below the umbilicus, thus carrying all that section of the tumour which lies below the opening of the trocar against the anterior abdominal wall. Now the uplifted portion of the latter is incised upon the trocar, as a guide down to the cyst-wall, which is lifted up and out of the peritoneal cavity by the instrument inside it, after which the pedicle is tied and the cyst removed." The advantages claimed for this proceeding over the ordinary method are the following: (1) It simplifies the operation considerably, since the search for, and separate opening of, the serous membrane are entirely done away, thus removing the principal difficulty connected with that part of the operation which precedes the opening of the cyst itself. (2) The chances of air, instruments, and hands, contaminated with septic material, entering the abdomen are considerably diminished, partly because the time during which the peritoneal cavity is exposed to their contact is shortened by just so much as it takes to empty out the sac; partly because the cyst collapses before the cavity is opened, and the suction originating from the inequable contraction of the sac and the abdominal walls is entirely done away with. (3) The chance of noxious contents of the tumour running into the abdominal cavity is very much lessened as compared with the ordinary proceeding, and they can be rendered harmless by previous disinfection. (4) The opening in the peritoneum is, on an average, smaller than with the old method, it being adapted in every single instance exactly to the requirements of the case. (5) The shock which results from laying open the abdominal cavity is shortened by just so much time as it takes to empty out the cyst, the greater part of the operation being reduced to that of simple tapping.

The only two contra-indications to this method of which Dr. Noeggerath knew were: (1) A preponderance of the solid over the liquid portion of the tumour, or where the whole mass consisted of very small cysts or semi-solid contents, too thick to pass through the canula. (2) A small sac, either originally so, or reduced by previous tapping, on account of the danger of encountering a loop of intestine in front of the cyst. A third possible contra-indication would be the presence of ascites, but he had had no occasion to test this question practically. If anything unusual should occur after commencing with his proceeding, however,

it could be interrupted at any step, and the operation finished after the ordinary method. At first sight the presence of adhesions might be taken for a grave objection, but during the operations performed after his method he had met with the ordinary run of adhesive inflammation, its products extending to the omentum, the lateral parietes and anterior surface, and spreading far into the pelvis; yet he had found no difficulty in separating them, one after another, from the collapsed sac.

Of the twelve patients upon whom the operation had been performed, three had died and nine recovered. Numerically, this was a small percentage, but of the three patients who died one was forty-five, one seventy-one, and one seventy-five years old. The two latter had evidently atheromatous degeneration of the arteries. In the case of the first of these patients only four-fifths of the cyst could be removed, on account of adhesions to the spinal column and the true pelvis. The ligature applied to the remaining mass, which he intended to treat according to the plan of Dr. Atlee, was tied in what is known as the Staffordshire knot. It slipped, and before another one could be applied a fearful hemorrhage occurred, which the woman only survived for three hours.

Before proceeding to describe his new method of after-treatment, the writer stated that in ordinary cases he left his patients for the week following the operation on the water-bed, which he now filled with cold water as soon as a rise of temperature called for anti-pyretic measures. He had found it as efficient as Kibbee's cot, and it had the great advantage over the latter of putting less strain on the nurse and causing less disturbance of the patient. If symptoms of nervous depression, or even collapse, were to begin to develop it could be filled again with hot water, and its stimulating effects thus called into action. The after-treatment properly began at the time when the cyst was being severed from its pedicle—that is to say, we had at this moment to decide whether the peritoneal wound, namely, the peritoneal cavity, was to be treated as an open wound or to be closed. Although it was generally admitted that the question regarding the treatment of the pedicle was so far settled that in the large majority of instances the intra-peritoneal method was the one to be chosen, there remained a certain percentage in which drainage was the only proper treatment. He then expressed the conviction that drainage of the pelvic cavity, as practised by surgeons at the present day, no matter of what shape or material the tube was made, was a source of danger.

The only reasonable method of drainage was that proposed and performed with great success by Dr. Bardenheuer, of Cologne, who had returned to the original idea of Sims, and drained the abdominal cavity through Douglas's cul-de-sac, with such modifications, however, as to overcome its disadvantages and dangers, on account of which it had been generally abandoned. He incised the cul-de-sac to the extent of at least an inch and a half, and introduced a tube of the size of the finger, with a number of large orifices in the supra-vaginal portion of it. To the tube there was further attached a cross-piece, also perforated, for the drainage of the base of the pelvis. But even if we had an absolutely reliable method for draining Douglas's cul-de-sac, cases undoubtedly occurred where the procedure would fail; and Dr. Noeggerath had, therefore, employed a new method of after-treatment for cases where drainage was indicated. It consisted in the use of the permanent, full bath, the water being allowed to remain in constant contact with the peritoneal cavity. The bath used for treating patients after ovariotomy consisted of a large tank made of boiler iron, joined and riveted like a steam boiler, having beneath it a chamber, of about two inches in depth, for the reception of steam, in order to maintain the temperature of the water at an equal rate without such frequent changing as would otherwise be necessary. All along and outside its upper border were projecting iron pegs for the purpose

of attaching a hammock, on which the patient lay in the water. The bath was connected with the hot and cold water-pipes, and also with the steam-pipes, and the hot and cold water was made to mingle in one common pipe before entering the tub, so that it could neither chill nor scald the patient as it ran in. Although it was desirable to have a bath as complete as the one described, it could be very well substituted in a private dwelling by a common movable bath-tub with a double bottom for the reception of hot water. The explanation of the action of the perpetual contact of water in preventing sepsis consisted in the fact, established by Wernich, that water in abundance is one of the most reliable agents for destroying bacteria. To the water was added enough common salt to make not quite a one-half per cent. solution, and a small quantity of salicylic acid. The number of cases he had treated with the bath was too small to shape any final indications for its use. He knew, however, already one contra-indication, and within its scope are comprised patients with weakened constitutions. The drain on the system from loss of serum and fibrine was severe. Dr. Noeggerath said, in conclusion, that he proposed to employ the permanent bath as a substitute for ordinary drainage in ovariotomy, and, above all, after Freund's operation, after the removal of fibroid tumours, and after Cæsarean section. He further stated that in the bath in one case an abdominal fistula an inch and a half in length, from which all of the solid fecal matter had been discharged for weeks, was closed in four days and a half so thoroughly that no feces were afterwards discharged through it.—*Boston Med. and Surg. Journal*, Feb. 10, 1881.

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## MEDICAL JURISPRUDENCE AND TOXICOLOGY.

### *Poisoning by Duboisin.*

DUBOISIN is the alkaloid obtained from the *Duboisia myoporoides*, a plant growing in Central Australia, and an extract from which has lately been brought into Europe and submitted to experiments, the most important being those of Dr. Sydney Ringer, published in 1878. In a communication to the *Nordinskt Medicinskt Arkiv*, vol. xii., 1880, Dr. BERNER, of Christiania, relates a case of poisoning by duboisin, the subject of the experiment being himself. After a simple instillation into the eye of the solution of the sulphate of duboisin, at the end of about ten minutes his sight became dull, and objects appeared small and distant. The pupil of the eye which had not been instilled was dilated to its maximum, the accommodation was suppressed, with simultaneous photopsia and intense sensation of vertigo, accompanied with pressure of the temples as if under the influence of cold. The face became pale, the nose cold, and there was singing of the ears with deafness. The mucous membrane of the nose, mouth, and pharynx was excessively dry, with a sharp scraping sensation in the throat, but no thirst. The speech was somewhat nasal, and the respiration stertorous in the recumbent posture. Vomiting occurred twice. The respiration was frequent and superficial. The arms and legs were paretic, with a marked sensation of prostration. Dr. Berner was nearly falling as soon as he closed his eyes. At the end of an hour and a half there was a copious discharge of limpid urine. This condition, which lasted from three to four hours, was at first principally accompanied by restlessness, and afterwards by somnolence. The paresis of accommodation lasted from four to five days, gradually diminishing, and the dilatation of the pupils from five to six days. The day following the experiment, there was a little disagreeable sweat over the whole body, with depression, and irritability, and physical and moral prostration.—*Med. Times and Gazette*, Feb. 26, 1881.

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